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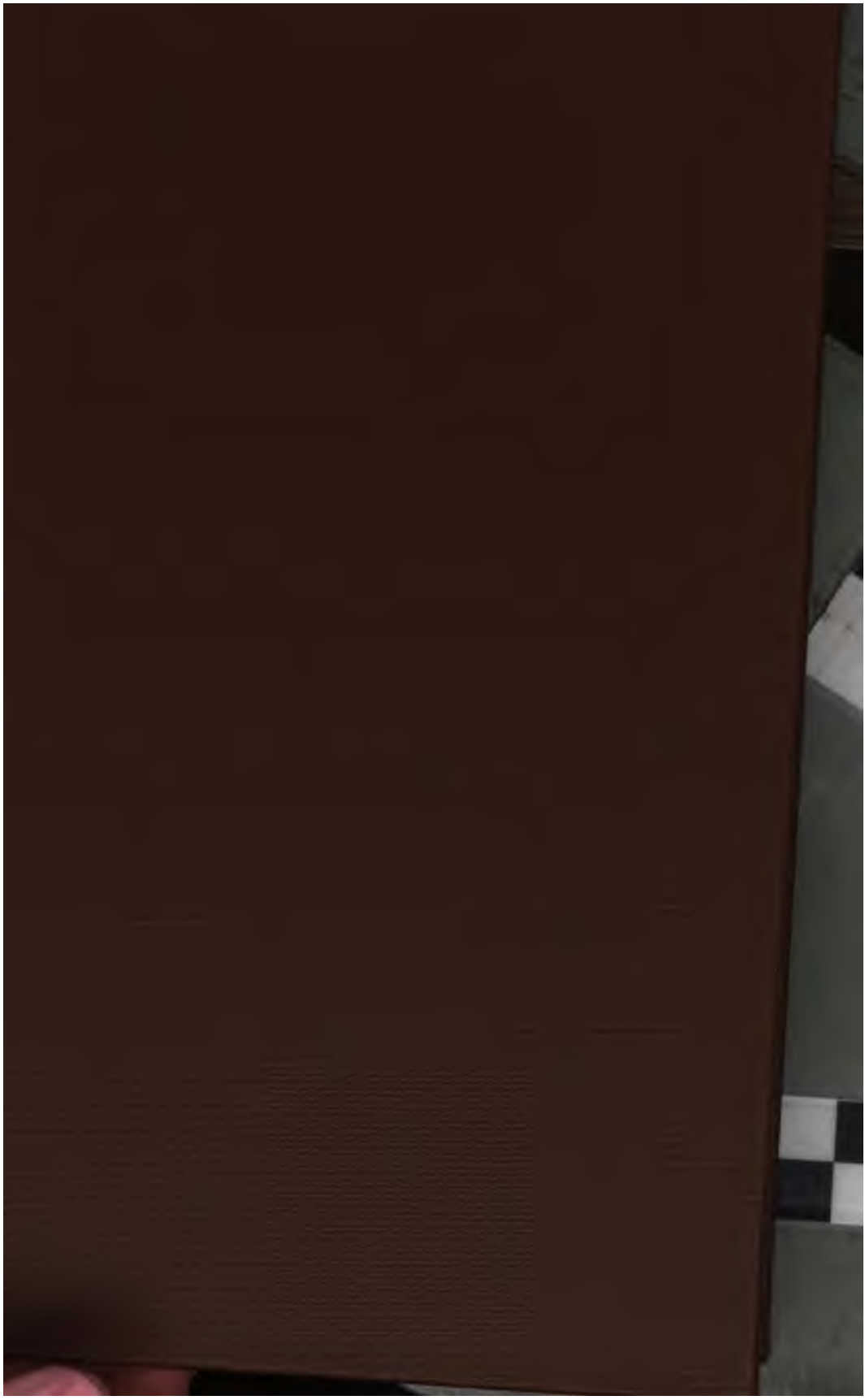

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THE

MINERAL CONCHOLOGY

OF

GREAT BRITAIN;

OR

COLOURED FIGURES AND DESCRIPTIONS

OF THOSE

REMAINS OF TESTACEOUS ANIMALS

OR

Shells,

WHICH HAVE BEEN PRESERVED AT VARIOUS TIMES AND DEPTHS IN THE EARTH.

BY JAMES SOWERBY, F.L.S. G.S. W.S.

HONORARY MEMBER OF THE PHYSICAL SOCIETY OF GÖTTINGEN, OF THE SOCIETY OF JENA, &c.

CONTINUED BY

JAMES D. C. SOWERBY, F.L.S. &c.

Many, O Lord my God, are thy wonderful works which thou hast done; they cannot be reckoned up in order to thee: if I would declare and speak of them, they are more than can be numbered.—PSALM xl. 5.

VOL. V.

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MDCCCXXV.

211073

Crania, Retzius.

Gen. Char. An unequalvalved bivalve, slightly irregular, suborbicular; upper valve patelliform; lower valve attached, flattish; muscular impressions four; no hinge; animal without a byssus.

In this Genus the thickness of the lower or attached valve is very variable, even in the same species it is sometimes so thin as to have been overlooked; nevertheless it is that valve which possesses the characters of the Genus in the most eminent degree; for, it is found to be attached, like the lower valve of Ostrea, by its own surface; to be wholly destitute of hinge, by which the other valve is united to it, either in the form of teeth that lock into each other, or of ligament upon the edge; to be marked with the impressions of four tendinous muscles, that unite it at once with the animal and the other valve; and to have a granulated inner surface, especially about the margin, which arises from its cellular, and not foliated structure, a structure possessed also by Radiolites and Calceola, which Lamarck has arranged with it under his family "Rudistes." Of the four muscular impressions, two are placed at a distance from each other, near the margin, which is generally almost straight between them; the others are towards the centre of the disk, and only separated from each other by an eminence in the lower valve, while they are more distant in the upper; the free or convex valve has a nearly central apex, is generally thin, and has the same granulated surface near the edge as the fixed valve has, but not in so remarkable a degree.

Although some of the characters of the Animal to which this shell belongs, may resemble those of Terebratula, yet the different mode of its attaching its shell to marine substances, and the very different texture of the shell itself, (resembling in many respects the harder corals) seems a sufficient apology for Lamarck's placing it in another family, along with Calceola, &c. The strong resemblance of its upper valve to that of Orbicula, (a Genus in which the animal attaches itself by a byssus, or tendinous substance that passes through a fissure in the lower valve) has caused much confusion, which has been encreased by Lamarck's forming a third Genus, (Discina) of a species of Orbicula; an error that has been pointed out and corrected by Mr. G. B. Sowerby, in the 13th Volume of the Linn. Trans., and in his own work, under the respective Genera.

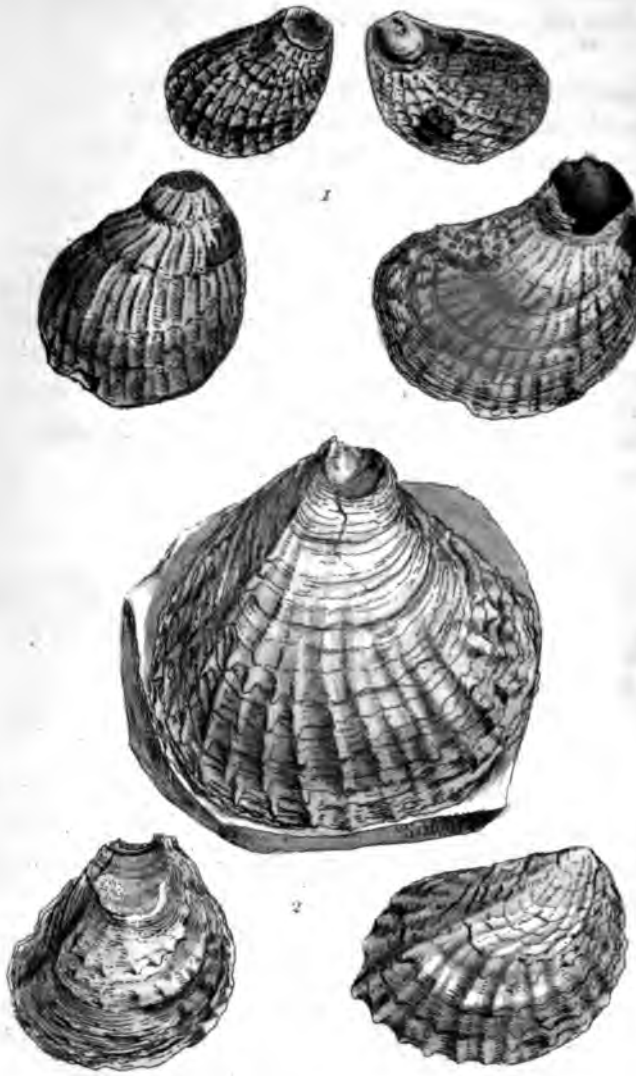
Only one recent species is known; it inhabits rocky shores and coral reefs, in temperate climates; several fossil species have been described.

large shells, for some individuals, that appear to be of a more luxuriant growth than others, are thin in the middle.

Since this curious shell was discovered by M. Defrance, attached to a fragment of an Inoceramus* Cuvieri, it has been repeatedly sought for; at length Mr. G. B. Sowerby was fortunate enough to find the attached valve upon an Echinus in Chalk; its cellular structure was then noticed as a character by which to distinguish it from other attached shells, and numerous specimens have been met with upon Echini, Inocerami, and other shells found in Chalk, in various parts of England. The upper valve had still remained unknown, had it not been accidentally discovered almost concealed in chalk upon a dislocated Echinus, picked up at Brighton several years ago, by G. B. Snow, Esq.: this is shewn in the upper figure.

The lower figure shews three states of the attached valve, found upon an Echinus sent from Norfolk by the Rev. G. R. Leathes.

*This Generic name will probably be superseded.



PLICATULA pectinoides.

TAB. CCCCIX.—*fig.* 1.

SPEC. CHAR. Oblong, ovate, curved, gibbose when old; longitudinal ridges numerous, furnished with depressed spines; free valve externally concave.

SYN. Placuna pectinoides, *Lamarck Hist. Nat. VI. pt.* 1, *p.* 224.

BY its curved form, projecting beaks, numerous longitudinal ridges, and concave upper valve, this Plicatula is easily recognized; the spines are not numerous, neither are they regular; they are always pressed close to the surface, and assist to form the ridges; it is depressed when young, but when old sometimes almost globose; the length is rarely two inches.

Collected in Clay, or Gault, below the Chalk Marl at Cambridge, by Professor Sedgwick; it also occurs in the same formation at Folkstone; the valves are filled either with Ironstone or Pyrites.

Lamarck having seen only imperfect hinges of this shell, from near Metz, has placed it in a Genus it does not at all resemble externally.

PLICATULA inflata.

TAB. CCCCIX.—*fig.* 2.

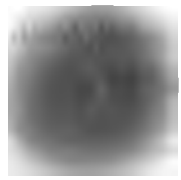
SPEC. CHAR. Suborbicular, gibbose, rather smooth, furnished with a few ridges and depressed spines; both valves convex.

SYN. Plicatula spinosa, *Mantell Geol. Sussex, p.* 129, *t.* 26, *f.* 13, 16 *and* 17.

THIS is probably the largest species of Plicatula known: the smooth surface, and the small number of the ridges, composed chiefly of depressed spines, suffice to distinguish it from the last, and the convexity of both valves will distinguish it from most Oysters.

Small specimens of this have been taken for Plicatula spinosa by Mr. Mantell, but it is a very distinct shell; it is found only in the lower beds of Chalk without flint, and that called sometimes Chalk Marl, but not in the Clay beneath.

The specimens figured, were kindly lent me by Professor Sedgwick; they are from the vicinity of Cambridge: I have others from Hamsey, by favour of Mr. Mantell.



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MUREX quadratus.

TAB. CCCCX.—*fig.* 1.

SPEC. CHAR. Short conical, transversely striated and obscurely bicarinated; base produced; beak short; aperture sub-rhomboidal.

A FEW irregular lines of growth decussate the regularly elevated striæ upon the surface of this short, rhomboidal Murex; it has no costæ, and the sutures instead of being varicose, are only slightly marked.

Probably this is a rare shell; only one individual has fallen under our notice; it was considered as the young state of the following, with which it was found mixed, until the want of costæ proved it to be distinct.

This is a Blackdown Fossil; the shell is as usual replaced by Silex.

MUREX Calcar.

TAB. CCCCX.—*fig.* 2.

SPEC. CHAR. Ovato-acuminated, transversely striated, costated; last whorl bicarinated; each suture supports two or three long, sharp spines; aperture round, with a long canal.

THE striæ upon the surface of this Shell are few, elevated, and partially granulated; the costæ upon the spire are numerous and sharp; on the last whorl they

are lost, or at least only appear in the form of tubercles upon the uppermost carina; the sutures are few, and hardly distinguishable, except by the spines they are furnished with; these spines are only two in number, except in some few specimens which have a third obscure carina, and such have three spines; the aperture is nearly round with a small angle at its upper part; the left lip is raised from the columella; the canal of the beak is almost covered over. Smith in his "Strata identified by organic Fossils," has figured this upon the Green Sand plate without a name; the name above given, was found attached to some specimens in a dealer's hands, but we know not upon what authority.

Found in the Green Sand of Blackdown.

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MUREX alveolatus.

TAB. CCCCXI.—*fig.* 2.

SPEC. CHAR. Ovate acuminated; surface divided into square cells by many acute sutures that decussate 8 or 10 prominent carinæ; whorls ventricose, flattened above; aperture oval, the outer lip toothed within.

THE length is at least double the width; the uppermost carina is largest; the principal ones below it, alternately large and small, with still smaller ones between them; they are all rounded. The beak is a little curved, and contains an open umbilicus.

Found in the Crag of Suffolk and Norfolk by Mrs. Cobbold, and the Rev. G. R. Leathes; it seldom acquires an inch and an half in length.

MUREX defossus.

TAB. CCCCXI.—*fig.* 1.

SPEC. CHAR. Ovate acuminated, smooth; whorls ventricose, bearing many obtuse carinæ; sutures numerous, acute, linear; aperture elongated, with many lamelliform teeth within its outer lip.

SYN. Buccinum defossum, *Pilkington in Linn. Trans. VII.* 117.

BETWEEN the elevated edges of the sutures, the surface is smooth, but divided by many (12 or more upon the last whorl) transverse, rounded, alternately large and small elevations or keels, that do not by their various sizes destroy the round contour of the whorls; the outer lip is thickened internally, where it has many elongated, lamellar teeth; the inner lip is, when fully formed, relieved from the columella, and has one or two irregular plaits upon its upper part; the beak is rather short.

A species sent among others from Hordwell; its sutures are not generally varicose, the smoothness of the surface between them, gives it a neat appearance.

MUREX sexdentatus.

TAB. CCCCXI.—*fig.* 3.

SPEC. CHAR. Ovate acuminated, costated, longitudinally striated, transversely carinated; whorls convex; aperture elongated with 5 or 6 teeth within its outer lip.

MUCH resembling the last, but the whole surface is marked with elevated sharp striæ, that are more crowded, but hardly more prominent, upon the swelled sutures; the thickened outer lip has about 6 obtuse teeth within it, in place of the many lamellar ones of the M. defossus; the last whorl is also more conical, and the aperture squareish.

Brought from Colwell Bay, on the Isle of Wight, by Professor Sedgwick, who pointed it out as distinct from several other shells with which it had been confounded.

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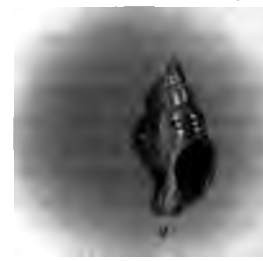

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BUCCINUM labiatum.

TAB. CCCCXII.—*figs.* 1 *and* 2.

SPEC. CHAR. Ovate acuminated, costated, transversely striated; striæ numerous, large, elevated and rounded; whorls convex; aperture oblong; its outer lip enlarged in the middle, and striated within.

THE striæ upon the surface of this shell are almost prominent enough to be called carinæ; they are nearly close together, and alternately large and small; the lip is thin and sharp, it has a very obtuse sinus that occupies its upper half, the lower half being enlarged; the beak is rather wide, open and twisted; the costæ are numerous, long, and curved; the upper parts of the whorls are slightly concave.

Found at Plumstead by the Rev. H. Steinhauer in 1812,; the Rev. Mr. Iremonger met with it on the Hampshire coast, and it has since been found in Colwell Bay on the Isle of Wight by Professor Sedgwick; it appears to abound wherever it occurs, and is probably characteristic of the so-called upper marine beds.

Fig. 1, is from a Hampshire specimen, and *Fig.* 2, one from the Isle of Wight.

BUCCINUM lavatum.

TAB. CCCCXII.—*figs.* 3 *and* 4.

SPEC. CHAR. Ovate acuminated, costated, furnished with many acute carinæ, and transversely striated; aperture oblong; lip crenulated at the edge, and striated within; whorls convex.

SYN. Buccinum lavatum, *Brander, f.* 16.

ALL the carinæ are sharp and equal; they are enlarged as they pass over the curved costæ; the striæ between them are minute, but very regular: these characters will distinguish this shell from the one just described, when the aperture is imperfect; when that is perfect, its notched edge without a sinus adds to the certainty.

Extremely abundant in the blue Clay of the Barton Cliff.

BUCCINUM crispatum.

TAB. CCCCXIII.

SPEC. CHAR. Ovate-acuminated, roughened by imbricated concave scales, placed up on numerous, close, transverse carinæ; who ls convex; lip subdentated; beak subcana culated.

SYN. Purpura imbricata? *Lam. Hist. N VII.* 557. P. Lapillus? *Lam. env. de Par* 36.

BUCCINUM Lapillus of Linneus, of which the recen Purpura imbricata is commonly considered as only rough variety, is so exactly like the more antient species before us, that it is difficult to point out any difference: they are all subject to much variation in the length of the spire, and size of the carinæ; still it seems that in all the varieties of the recent species, the last whorl bears a larger proportion to the spire, than it does in the corresponding varieties of the fossil; the latter has also a more contracted beak, and no flat space between the carinæ: in the recent species there is commonly one large and one small carina alternately, with flat spaces between them; but in the fossil the small carinæ encrease in number with age, so as constantly to fill the space between the larger ones.

Whether or not the above observations be sufficient to prove the Shell before us to be a distinct species, it is certainly desirable to have a distinguishing name for it as a fossil. The doubt attached to Lamarck's Synonyma, only arises from my not having seen an authentic specimen.

Very abundant in many parts of the Norfolk and Suffolk Crag.

Fig. 1 shews a rare very short variety; *fig.* 2 has one of the carinæ very conspicuous; *fig.* 3 the usual habit.

There is much difficulty and uncertainty in fixing the Genera of Shells formerly called Buccina and Murices; at present we have called the shells before us Buccina, but it may hereafter be necessary to separate them from that Genus, especially the first, the lip of which is like that of some species of the Genus Fusus, or Cerithium, and even approaches Pleurotoma.

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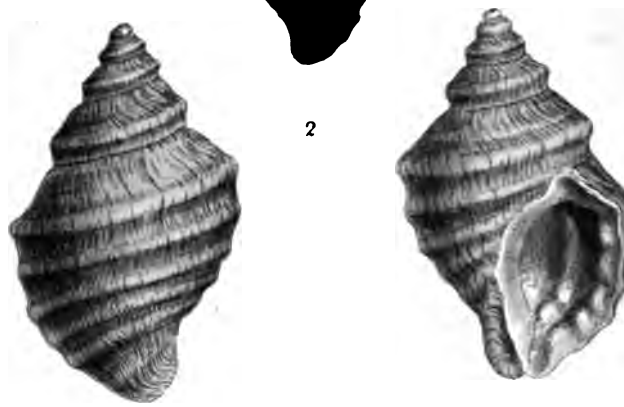

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BUCCINUM tetragonum.

TAB. CCCCXIV.—*fig.* 1.

SPEC. CHAR. Squareish, ovate, pointed, costated; costæ crossed by four large and several small ridges; aperture oblong; lip toothed within.

A THICK rather square rugged looking shell; the large ridges divide the surface between the costæ into cells, hat are crossed by the smaller intermediate ridges: it s probably when perfect, covered with concave scales; heir remains give it much the aspect of a Murex: the eak is short, and but slightly curved; the teeth in the ip are about seven, they are blunt.

But one specimen of this species is in Mr. Sowerby's abinet; it was kindly placed there by Mrs. Cobbold, rho found it near Ipswich.

BUCCINUM incrassatum.

TAB. CCCCXIV.—*fig.* 2.

SPEC. CHAR. Thick; ovate, pointed, rugged, with about five carinæ, the uppermost largest; aperture oval; lip obscurely furrowed within.

THE few nearly smooth, large, principal carinæ, with ery slight indications of lesser ones between them, and ıe weight of this shell will always make it easily known: ıe obscure furrows in the lip form obtuse teeth beween them, and are opposite the carinæ; the deep and istant lines of growth make the surface rugged.

An abundance of this very distinct species in all ages of growth, has been found by the Rev. G. R. eathes in Suffolk, and a liberal supply sent for figurıg.

BUCCINUM desertum.

TAB. CCCCXV.—*fig.* 1.

SPEC. CHAR. Ovate oblong, costated, transversely striated; whorls contracted above by a rounded canal; lip striated within.

SYN. Buccinum desertum, *Brander, f.* 15.

IN general the costæ are very irregular, they are numerous but not very prominent, and have several sharpish points upon their upper extremities, where they are crossed by the striæ; the upper part of each whorl is contracted by such a furrow as might be produced by tying a cord round it at a small distance from where it joins the spire; there is an obscure fold, at the base of the columella.

From Barton Cliff by favour of Miss Dent, and the Rev. T. Cooke.

BUCCINUM canaliculatum.

TAB. CCCCXV.—*fig.* 2.

SPEC. CHAR. Ovato-elongated, transversely striated; spire costated; whorls separated by a canal; lip thickened, sharp, dentato-striated within.

SYN. Buccinum desertum, *Brander, fig.* 18 *and* 19?

ABOUT twice as long as wide, but variable in its proportions; the canal around the spire is flat, with an elevated margin, and quite different from the canal in B. desertum. two or three of the last whorls are mostly free from costæ, but they have sometimes one or two that appear to be formed from a thickening of the lip at certain periods of growth; the beak is curved, the columella has no plait.

That this is the B. desertum of Brander, fig. 18, there appears but little doubt, although his figure is too short for the more common specimens. The thickened lip, and the consequent formation of two or three obscure varices upon the latter whorls, do not occur upon B. desertum just described: they tend to remove it from the same genus, but they are obscure and smooth; it resembles Murex striatulum of Lamarck, but there is no canal described about the spire of that fossil.

Very frequent at Muddiford and Barton, as the numerous specimens sent by several good Friends abundantly prove.

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MUREX tricarinatus.

TAB. CCCCXVI.—*fig.* 1.

PEC. CHAR. Ovate oblong, transversely striated; sutures in three rows, foliaceous, dentated, bearing one spine upon the upper part of each; aperture obovate; canal recurved.

YN. Murex asper, *Brander, fig.* 77, 78, 79, *and* 80. Murex tricarinatus, *Lamarck Hist. Nat. VII.* 177.

ETWEEN each of the beautiful, plaited, leaf-like sutures, an obtuse elevation or tubercle; the striæ are about ren, and elevated, corresponding with the plaits of sutures; the lip is toothed within, the canaliculated ine that proceeds from its upper part varies in length: French specimens which are besides often larger, ve it generally very short; the sutures consist of ny laminæ.

We are indebted to Miss Dent and Miss Tylee for the rton specimens here figured.

MUREX bispinosus.

TAB. CCCCXVI.—*fig.* 2.

EC. CHAR. Ovate elongated, with three rows of foliaceous sutures, and two or three transverse ridges; sutures simple, bearing two concave spines to each whorl; canal nearly straight.

LONGER formed shell than the last: the projecting t of each suture consists of a single smooth lamina lied against two canaliculated spines; the surface of whorls is nearly smooth, without any elevation be- en the sutures.

Miss Dent favoured us with this new species in 1820: have since received it from our kind Friend, the Rev. Cooke; it occurs sparingly at Barton, generally imfect.

LUCINA divaricata.

TAB. CCCCXVII.

SPEC. CHAR. Orbicular, gibbose, marked with two sets of oblique arched striæ, and 3 or 4 deep lines of growth.

SYN. Tellina divaricata, *Linn.*
Lucina divaricata, *Lam. env. de Paris*, 244. *Hist. Nat. V.* 541.

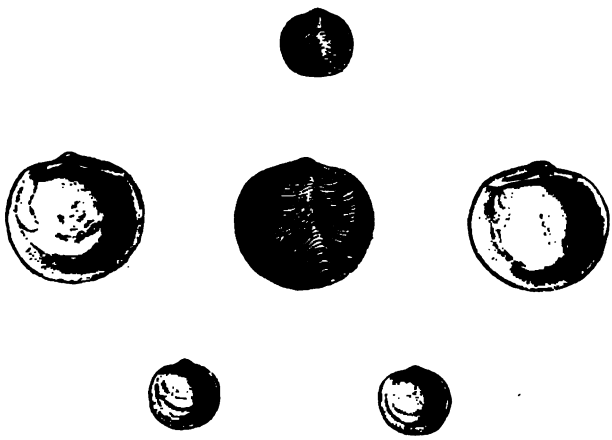
THIS round and almost globose shell, is rendered very remarkable by two sets of hollow lines that converge towards each other, and meet upon the disk near the posterior side, at an obtuse angle; the shell is thick and glossy, inside it is commonly dull, and partially granulated.

So exactly do the fossil specimens agree with recent ones from the West Indies, that Lamarck considers them the same, and we see no reason to differ from him in opinion; they are both liable to some variation, especially in the fineness of the pattern: the recent specimens are white.

This pretty Hordwell fossil has been sometime in the collection: the addition of a very neat individual has lately been made by the Rev. T. Cooke.

It occurs also at Grignon and Bordeaux.

The large figures are from Bordeaux specimens.



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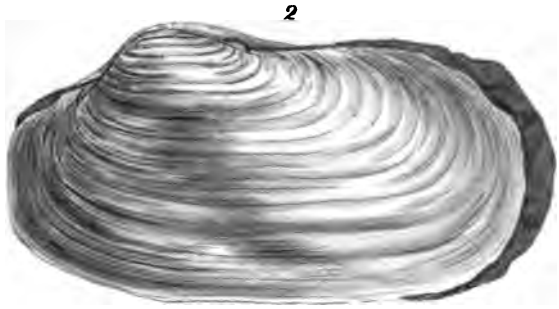
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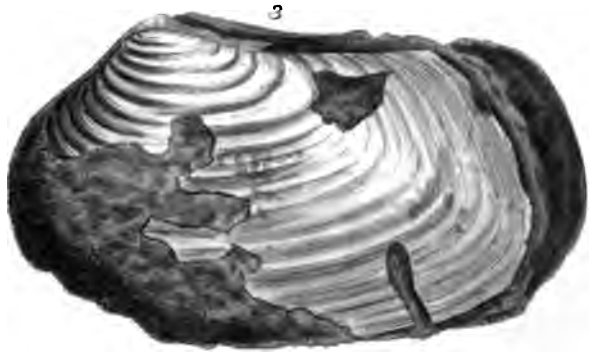
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MYA depressa.

TAB. CCCCXVIII.

SPEC. CHAR. Obovate, depressed, very slightly gaping, anterior side shortest; beaks prominent incurved; hinge line straight, depressed; ligament external, short.

SHELL thin, slightly undulated by numerous lines of growth; it has much the aspect of a Tellina, but although it has a bend in the front, it has not the sharp curve that characterizes Tellina. Many specimens have an external ligament preserved.

Figured from a specimen in Miss Benett's Cabinet from Weymouth. Miss Benett has also found it near Osmington, filled with indurated Clay that has by decomposition acquired a rust colour: Mr. Wier has met with it in the Clunch Clay, near Horncastle in Lincolnshire, and I have specimens very much crushed in similar Clay, from Shotover Hill, near Oxford, where it is accompanied with Trigonia clavellata, tab. 87: this Trigonia, besides some very remarkable varieties of T. costata, 85, has also been collected by Miss Benett near Weymouth, and helps to shew the similarity of the strata at the above-mentioned places.

MYA gibbosa.

TAB. CCCCXIX.—*fig.* 1.

SPEC. CHAR. Obovate, transversely furrowed, gibbose; beaks prominent, incurved; posterior side very short; anterior side rather attenuated, gaping.

THIS differs from the last chiefly in its thickness and the narrow formed anterior side; it is nearly twice as thick in proportion as the Mya depressa.

We are indebted to the kindness of Miss Benett for specimens of this shell; they were picked up near Osmington with the rust-colored specimens above mentioned, in 1814.

MYA plicata.

TAB. CCCCXIX.—*fig.* 3.

SPEC. CHAR. Oblong, ventricose, straight, anteriorly gaping, truncated; posterior side very short, transversely plicated.

ABOUT twice as wide as long, nearly cylindrical; the whole surface is a little waved, but the posterior side near the beaks, is remarkably so.

Found in ferruginous Sand mixed with a few grains of green Sand, at Sandgate near Margate.

MYA intermedia.

TAB. CCCCXIX.—*fig.* 2.

THIS may possibly be a distinct species, but I am inclined to represent it as a variety only, because the specimen formerly figured, (tab. 76.) is not so perfect, and may have been expanded by pressure.

Many specimens like the one before us, have been found in the Bognor Rocks with the external ligament remaining.

It is impossible to say positively to what Genus these and some other fossils referred to Mya rightly belong, as we cannot find the inner parts of the hinges. Several of them resemble Leach's Genus Thracia, in having an external ligament, but that Genus is included in Anatina among the Myaires by Lamarck, and even the Lutraria has a small external ligament, although they are both arranged in families, supposed to have only an internal one: thus the recent Genera do not appear to be sufficiently settled to refer the fossils to, if even we did know the whole of their hinges.

TAB. CCCCXX.

AMMONITES Catena.

SPEC. CHAR. Depressed, furnished with two rows of short tubercles upon each side; whorls 6 or 8 smooth, with flat sides, the inner ones exposed; front rather convex; aperture square.

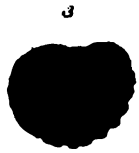
So seldom is any more than the casts of the chambers of this shell found that its true form is scarcely known; these casts have, by the decay of their surfaces, lost so much that they hang loosely together, like the links of a chain: when less diminished, they are found adhering but with very slight traces of the shell remaining; it appears to be smooth, and to have no undulations or ribs excepting when very young: the tubercles are upon the inner and outer angles of the flat sides of the whorls; they are of a moderate size, conical, with rounded points, and are not truncated in the cast: the edges of the septa are very much, deeply and sharply sinuated; the front is slightly rounded, without any appearance of a keel.

A long known, and highly admired relic of the ancient world; the casts of the chambers hanging loosely together have an imposing appearance. It seems that this shell was first lined with a sparry crust, containing much Iron, and afterwards filled up with crystallized carbonate of Lime; the shell and ferriferous lining being very liable to decay, have generally disappeared, and left the remainder of the cast in detached portions. The most perfect specimen of this kind, is one in the possession of our valuable and scientific Friend, James

Clealand, Esq, there is also a very good one in the British Museum; the former is selected for a figure. I have one that exhibits a near approach to the external form of the shell, but would not make so handsome a figure; it has in one part a small portion even of the shell itself remaining; none of its joints are free: on one side of it are several young Oysters, and on the other, a full grown Oyster, (Ostrea Delta) they adhere so closely, that there does not appear to be space enough between them and the stony cast for any shell, it must have been thin, and is perhaps of such a texture as does not permit it to be readily distinguished from the Oyster; or we must conclude that the Ammonite was in a fossil state before the Oysters existed, but had not been removed far from its original station, before it was again buried to form along with the Oysters the index to another epocha. This is the species referred to at page 72 of Vol. IV. as resembling the A. perarmatus.

Found imbedded in sand in Marcham Field, near Abingdon, in Berkshire; parts sometimes occur that must have belonged to shells above a foot in diameter.

Casts of A. perarmatus tab. 352, in a similar loose state of preservation, are found accompanying the A. catena, and until lately, have been confounded with it: the ribs that connect the tubercles in pairs will distinguish them; such ribs being very rare upon the smaller spined A. Catena.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AMMONITES striatulus.

TAB. CCCCXXI.—*fig.* 1.

EC. CHAR. Discoid, carinated, radiated; sides of the whorls convex; the inner whorls exposed; radii numerous, slender, undulated; surface covered with minute striæ parallel to the radii; aperture elliptical.

HE whorls are about 6; their regularly convex sides, l numerous, small, twice curved ribs, and slightly ieved keel, give a symmetry to the general contour t is not easily recollected: the diameter is nearly ır times the length of the aperture; the cast differs m the outer surface only in wanting the fine striæ, or es of growth, from which the name is taken.
Found imbedded in a marly Limestone nodule, accomnied with a portion of some fossil bone, on the coast Robin Hoods Bay by Mr. Crawford of Scarborough.

AMMONITES subradiatus.

TAB. CCCCXXI.—*fig.* 2.

EC. CHAR. Lenticular, umbilicated, carinated, and radiated; radii twice curved, obcure excepting near the margin, where they are bifid; umbilicus small; keel entire; aperture sagittate.

HE edge of this lenticular Ammonite is rather obtuse, d the carina not much relieved; the sides are nearly ıooth, for the curved radii are very obscure excepting ar the edge after they have become forked or divided, some of them are, into three or even four short ribs; : thickness is about one fifth of the diameter.
Found several years ago on the road from Bath to istol; it has been broken out of a mass of the Ironshot)lite; no other specimen has reached our Cabinet.

TAB. CCCCXXI.—*fig.* 3.

AMMONITES cristatus.

SPEC. CHAR. Lenticular, flattened, carinated; keel thin, deeply notched; inner whorls concealed.

SYN. Ammonites cristatus, *Defrance, MSS.*

THE thin deeply notched keel of this Ammonite distinguishes it from every other.

Found near Weymouth by Mr. Bryer, who kindly placed it in Mr. Sowerby's collection many years ago; it is a cast in Pyrites; similar specimens have been found on Mount Jura as I learn from M. Defrance's collection.

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VENUS transversa.

TAB. CCCCXXII.—*fig.* 1.

SPEC. CHAR. Transversely ovate, elongated, gibbose, nearly smooth; posterior side small, rather pointed; shell thin.

THE transversely elongated form of this Venus, (Cytherea of Lamarck) distinguishes it well from the several varieties of V. incrassata (tab. 155.) found at Barton and upon the Isle of Wight; in shape it is between Cythereæ nitidula and lævigata of Lamarck; it is rougher than either of them; its thin shell is strongly marked by lines of growth; the lunette is large, ovate and pointed.

Found in the Barton Cliff by Miss Beminster.

VENUS lineolata.

TAB. CCCCXXII.—*fig.* 2.

SPEC. CHAR. Obovate, gibbose, marked with numerous, minute, transverse striæ.

SYN. Venus rotundata, *Brander, fig.* 91. *excl. Syn. and fig.* 93.

A NEAT little shell, the striæ are so fine as to require a glass for their manifestation, but they are so deep that they may be felt with the finger nail; the lunette is of a moderate size.

This is not V. rotundata of Linnæus, but there is hardly any doubt of its being Brander's fig. 91. his fig. 93 which Solander has referred to the same name, is surely distinct: it has been mentioned in our description of Tellina ambigua (tab. 403.) to which it is more nearly related.

Presented by the Rev. T. Cooke, who found it sparingly at Barton.

VENUS elegans.

TAB. CCCCXXII.—*fig.* 3.

SPEC. CHAR. Ovate, convex, transversely sulcated; lunette ovate; the spaces between the sulci rounded and shining.

SYN. Venus gallina, *Brander fig.* 90, *excl. Syn. Linn. et forte fig.* 94. Cytherea elegans, *Lamarck env. de Paris*, 232.

A RATHER depressed shining shell precisely like the Cy. ericinoides of Lamarck (Hist. Nat. Vol. V. p. 581.) but considerably smaller; it is probably therefore his C. elegans, although it is too ovate to agree with his description; it agrees better with his figure in the Annales du Museum: the sulci upon its surface are few, deep, sharp at their bases with rounded edges; the posterior side is small, a very little rounder than the other; the lunette is also small; the beaks are but slightly prominent.

One of the less common, although not a scarce Barton Fossil. What Brander's fig. 94 is, must still remain a question; it must be a badly chosen view, if it be from a variety of this species.

VENUS? pectenifera.

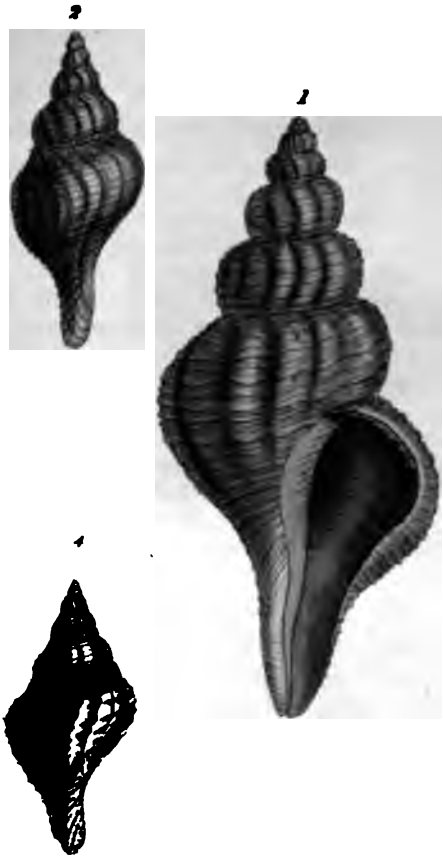
TAB. CCCCXXII.—*fig.* 4.

SPEC. CHAR. Transversely oblong, carinated; surface longitudinally sulcated, and supporting a few erect lamellæ, commencing at the keel; anterior side smooth, truncated.

THIS elegant shell has about four erect, rather thick lamellæ, that rise from the keel which defines the smooth anterior side, and curve over the rest of the disk; they are striated upon their lower sides, so as to resemble combs.

So rare is this species, that only a single valve has been found at Barton, although it has been particularly sought after for several years: the hinge teeth are broken away, so that the Genus is left doubtful; it has much the appearance of a Crassatella.

From the valuable collection of Lord Fitzharris.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FUSUS regularis.

TAB. CCCCXXIII.—*fig.* 1.

SYN. Murex regularis *of Tab.* 187. *f.* 2. Murex antiquus, *Brander f.* 74. *sed non Linn.*

THE small specimens of this species figured formerly, were not suspected to belong to Brander's M. antiquus, but a series presented by the Rev. T. Cooke, several of which agree exactly with Brander's figure and description, prove that they are the same.

The three species figured upon the same plate, (tab. 187.) and called Murices, certainly belong to the Genus Fusus, as it is at present established by Lamarck; they are all remarkable for the square shape of the elevated lines that cross them, and are not met with abroad.

FUSUS complanatus.

TAB. CCCCXXIII.—*figs.* 2 *and* 3.

SPEC. CHAR. Ovato-fusiform, pointed, costated, and transversely striated; superior edges of the whorls elevated and pressed upon the spire; striæ contiguous; columella curved.

THERE are two varieties of this Fusus, one of them has the costæ much more prominent than the other; in both the obtuse, slightly elevated ridges between the striæ give the surfaces a uniformity of character by which the species is well distinguished. The beak is shorter than the spire, and a little expanded; there is no appearance of a fold upon the columella, by which it is distinguished from several nearly allied French species.

Both varieties were found plentifully at Highgate, while the road through the Hill was in progress.

Fig. 3, represents the costated variety.

FUSUS Lima.

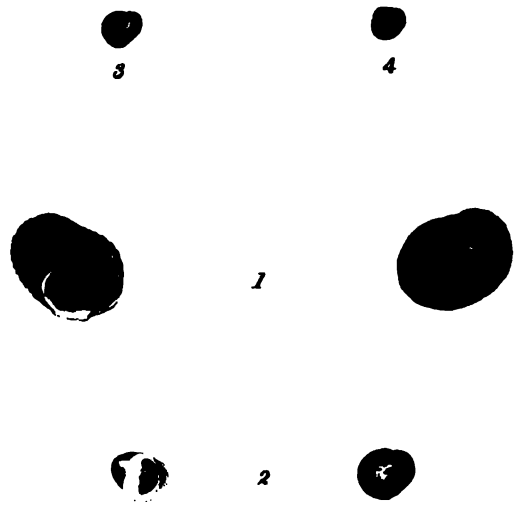
TAB. CCCCXXIII.—*fig.* 4.

SPEC. CHAR. Ovato-fusiform, pointed, carinated; upper edges of the whorls elevated and pressed upon the spire; carinæ many, acute, the central ones decussated by small sharp costæ; lines of growth acute.

UPON the upper parts of the whorls, the carinæ are mere striæ decussated by the lines of growth; in the middle they are sharp, and so much elevated that they almost form spines where they are intersected by the small acute ribs; upon the lower parts of the shell, they are prominent, sharp and entire: in other respects this agrees with the last species.

We have met with but one specimen of this neat shell, it came from Barton.

Fusus rugosus of Lamarck is intermediate in form between this and Fusus rugosus of Min. Conch. tab. 274, but quite distinct from either; Lamarck has erroneously quoted Brander's Murex porrectus, and we have been accordingly misled; of course Brander's name must be restored. Lamarck's F. rugosus does not occur in England.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NERITA globosa.

TAB. CCCCXXIV.—*fig.* 1.

SPEC. CHAR. Subglobose, transversely sulcated; spire apparent; one tooth upon the inner lip; outer lip plain within.

THREE or four black bands and a few rows of oblong spots decorate the surface: the outer lip is rather thin and void of crenulations; the inner lip is narrow, with only one very obtuse tooth near its upper end; within the aperture near its lower part, is a conspicuous lamelliform tooth that regulates the opening of the operculum by confining the appendage that moves between it and the lip: the spire is not prominent.

The only circumstance in the form of this shell that induces us to determine it to be a Nerita, is the sulcated surface in which it agrees with many recent marine Shells, that have like it, no teeth or crenulations on the outer lip, but are still called Neritæ; being a fossil and much corroded, it may have lost its epidermis, although some colour remains.

This unique specimen was lent us by the Rev. T. Cooke, who has taken much pains to fill up our list of Hampshire shells: it contained two valves of Corbula Pisum (tab. 209.) an intimation of its marine origin.

NERITA aperta.

TAB. CCCCXXIV.—*fig.* 2, 3 *and* 4.

SPEC. CHAR. Sub-hemisphærical, smooth; spire visible, depressed; aperture orbicular, expanded; inner lip obscurely crenated, bearing one large tooth.

A THICKENING of the outer lip a little within its sharp edge, together with its general form not being produced in the middle as in many Neritinæ, seem to warrant the placing this as a Nerita. In most specimens the surface is marked with acutely zigzag brown lines of width equal with the white between them: but one individual has a black ground, with oval white spots. (See fig. 4.)

Professor Sedgwick discovered this in Colwell Bay, on the Isle of Wight; from his specimens we have taken figures 3 and 4, while fig. 2 is from a Barton example that we have just received from our kind friend Miss Salisbury. The Isle of Wight specimens are often much corroded.

ANOMIA; Linn.

Gen. Char. An irregular bivalved Shell: with a foramen in the flatter valve that allows the passage of a bony appendage by which the Animal is attached to marine substances; beaks none or very short.

All the species of this genus have one valve nearly flat, and exactly conforming to the surface it is applied to and where it is fixed by the bony appendage terminating one of the muscles that is united to the other valve: this appendage is often termed an operculum; it exactly closes the hole in the valve it pervades, which can never be opened by the animal, since the convex valve is the only moveable one: the hinge is a small ligament contained within the beak of the convex valve, and attaching the margin of the other to it. The convex valve alone may be known by three approximating muscular impressions nearly in the centre of it.

This Genus is so easily recognized, that it is remarkable Linneus should have comprehended the modern Genus Terebratula with it. It is unfortunately named.

ANOMIA striata.

Tab. 32.

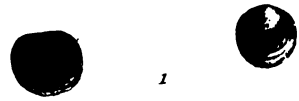
Spec. Char. Suborbicular, convex, when old contracted towards the beak; longitudinally striated.

Syn. Anomia Ephippium, *Auctorum.*

The fine striæ that cover this fossil are very conspicuous in the French specimens, and are alone sufficient to determine it a distinct species: in the young state these striæ are not easily discoverable, it may then be readily taken for A. Squamula, but the foramen does not extend to the edge of the valve as in that species.

A single valve of this remarkable shell is now and then found at Barton; figs. 2, 4 and 5 are from that place, two of them through the kindness of the Rev. T. Cooke.

The small individuals fig. 1, were attached to Pinna affinis, (tab. 313.) and the group fig. 3 to a Pectunculus, both in the Sandstone of Bognor Rocks. It is not rare in several parts of France.



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Dolium, *Lamarck.*

Gen. Char. A thin, subglobose, univalved shell, transversely banded; spire short; aperture longitudinal with a notched base, and crenated or waved sharp lip.

The shells that compose this genus have, from their general resemblance to each other, been long considered as a peculiar tribe; we are indebted to Lamarck for their separation from Buccinum, to which Linnæus referred them. They have usually a subglobose form, although some are elongated and ventricose; the columella is generally curved, and has a small, sometimes open umbilicus; the base is very slightly produced and truncated, so as to form a sinus, but not a beak to the large aperture; they have a thin horny epidermis, that when perfect conceals a marbled or spotted surface, whose colors are but few, and not brilliant. The transverse bands are answered by furrows within the shell, and hence the lip is crenated or undulated through its whole length.

The species are marine and not numerous, only one and that an uncertain one, has been found in a fossil state.

Dolium nodosum.

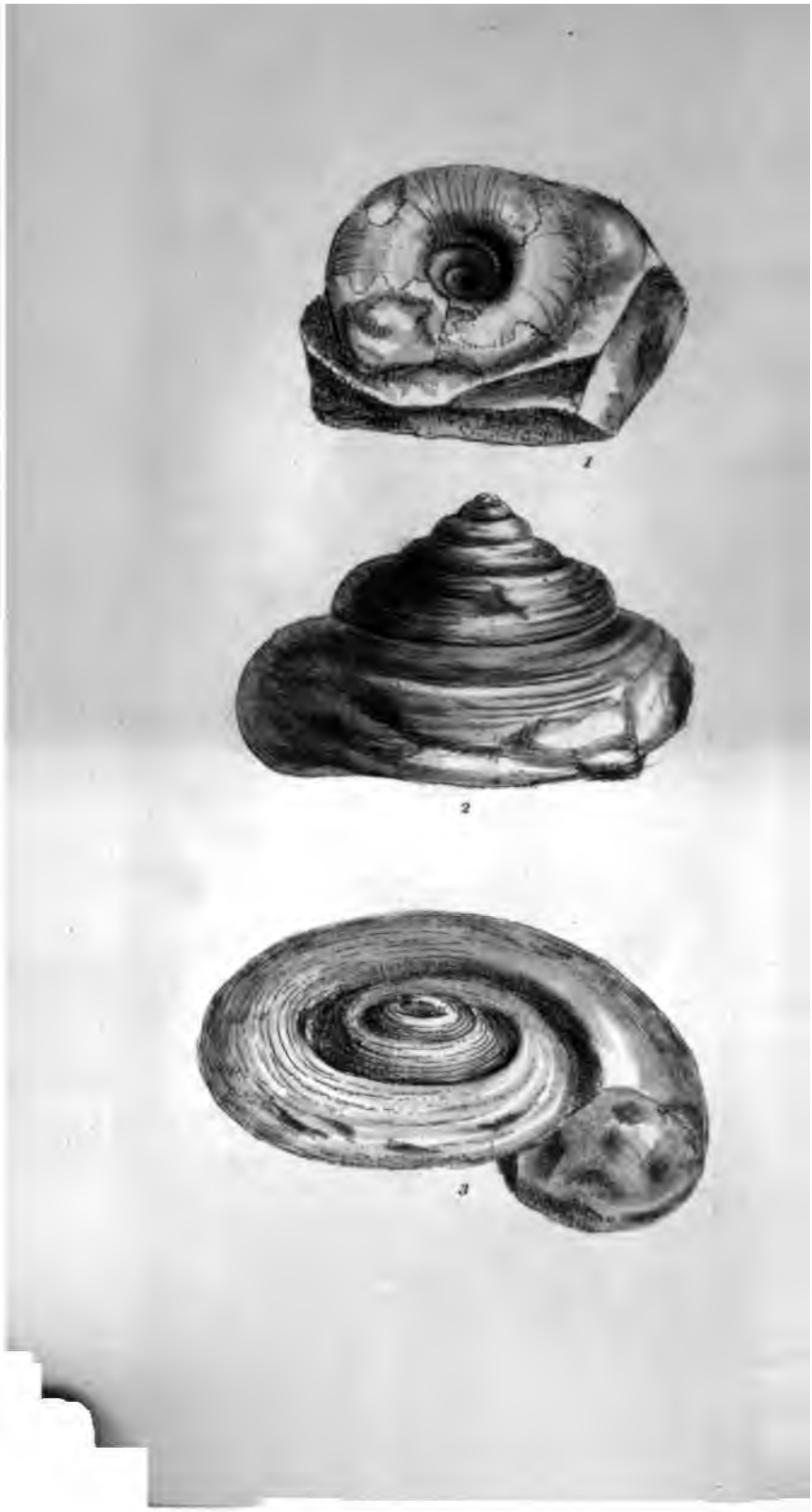
TAB. CCCCXXVI. *and* CCCCXXVII.

Spec. Char. Obovate, ventricose, ornamented with transverse rows of knobs.

Syn. Cast of a species of Dolium? *Mantell Geol. Sussex*, 196.

In consequence of the imperfections of the only remains we have of this extraordinary fossil, we can give but short details of its form. It is about four fifths of its length wide, the spire is very short and consists of only two or three turns; it is marked with a few transverse, prominent, rounded bands, and a few longitudinal striæ; the bands upon the body of the shell are divided into obtuse, not much elevated but large knobs, that are but badly preserved; the base and part of the columella are lost with the surrounding Chalk, that has been broken away; there is no vestige of the shell itself, and the cast probably exhibits its inner surface only.

Soon after the discovery of this noble specimen, in Clayton Pit by R. Weeks Esq. of Hurstperpoint in Sussex, it was kindly lent to Mr. Sowerby; it would have been figured before, but hopes were entertained of finding specimens to illustrate such parts as are here wanting, no other has however occured.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TAB. CCCCXXVIII.—*figs* 1 *and* 2.

CIRRUS perspectivus.

PEC. CHAR. Obtusely conical, spirally striated; umbilicus deep, exposing one third of each whorl; aperture transversely oblong.

YN. Cirrus perspectivus, *Mantell Geol. Sussex, p.* 194. *tab.* 18. *f.* 12 *and* 21.

OT quite so high as wide, with a flattish base, in the ntre of which is an acute conical umbilicus; the in-nal portion of each whorl is regularly convex; the ter rather squared; there is no canal around the ire; the inner surface is pearly.

Not uncommon in the upper Chalk of Sussex, Kent, iltshire &c. it is also found, but rarely, in the lower alk; the place of the shell is often supplied by a een steatitic substance, that retains the cast of the ternal striated surface. The specimen (fig. 1.) shew-; the internal pearly portion, is from Northfleet; the ier was among a number sent from Wiltshire by the e Mr. Cunnington.

CIRRUS depressus.

TAB. CCCCXXVIII.—*fig.* 3.

EC. CHAR. Subdiscord, concentrically striated; umbilicus wide, exposing a small portion of each whorl; an angular canal runs round the spire; aperture obtusely angular.

N. Cirrus depressus. *Mantell Geol. Sussex, p.* 195. *t.* 18. *f.* 18 *and* 22.

HE short spire and the canal around it, produced by prominent upper parts of the whorls, distinguish this m the last, it is nevertheless possible that they may only varieties.

Nearly as common as the C. perspectivus in the same iations, we have received it with a similar green coat- from Wiltshire; the specimen figured is from dgwick in Sussex, through the kindness of Gideon ntell, Esq.

Cirrus rotundatus.

TAB. CCCCXXIX.—*figs.* 1 *and* 2.

Spec. Char. Conical, nearly smooth; whorls convex; umbilicus large; aperture round.

Very nearly related to Cirrus acutus, t. 141. but the upper portion of each whorl is not flattened as in that species, and it has a general bluntness or roundness of contour by which it is distinguished at first sight; the surface is marked with fine lines of growth.

Found in the Limestone of the Lead Measures near Settle in Yorkshire.

Cirrus carinatus.

TAB. CCCCXXIX.—*figs.* 3 *and* 4.

Spec. Char. Discoid, smooth? whorls few ventricose, obtusely carinated, convex below; umbilicus large; aperture transverse obovate.

But little can be said of this fossil since we know only the cast of the inside; its spire is quite depressed, and the whorls almost separated from each other; the umbilicus is deep as well as wide.

Sent from Lakehampton Hill near Cheltenham, by our scientific Friend Miss E. Warne.

The genera Cirrus and Euomphalus merge into each other, they are distinct from Delphinula.

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Mitra parva.

TAB. CCCCXXX.—*fig.* 1.

Spec. Char. Ovate fusiform, short, transversely sulcated; upper edges of the whorls defined, entire; aperture elongated, lip plaited within; four plaits upon the columella.

Only a quarter of an inch long, and one-eighth wide; the whorls are slightly convex, and smooth and shining between the sulci; the upper sulcus is deeper than the others, and so produces a margin to the whorls; the plaits within the lip reach nearly to the edge which is sharp.

Mitra pumila.

TAB. CCCCXXX.—*fig.* 2.

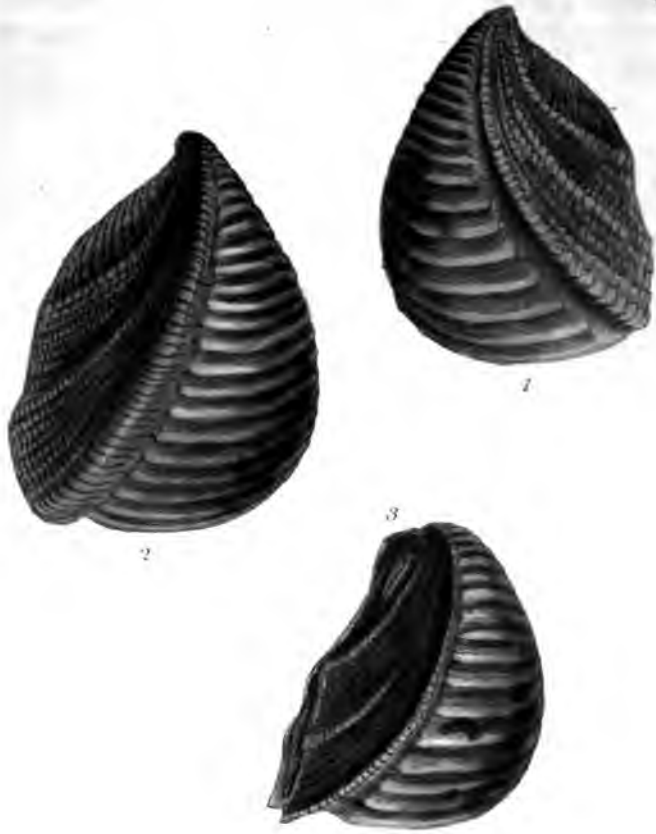
Spec. Char. Ovate fusiform, short, transversely sulcated; upper edges of the whorls defined, crenated; sulci decussated by longitudinal costæ; aperture elongated; lip plaited within; four plaits upon the columella.

In every thing excepting the longitudinal costæ, this agrees exactly with the last: these costæ are numerous, not much elevated, and slightly curved; they divide the sulci into regular square cells, and give a rough aspect to the shell.

Many specimens of both the above Mitres have come to our hands through various channels from Barton Cliff. Amongst them we do not find any intermediate varieties.

It does not appear that either of them has been previously described.

Mitra graniformis is the nearest given by Lamarck; it is longer and wants the transverse sulci. Voluta obsoleta of Brocchi has a similarly ornamented surface but it is much longer and sharper in form, and has but three plaits upon the columella.



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TAB. CCCCXXXI.

TRIGONIA elongata. *(var. T. costata?)*

SPEC. CHAR. Elongated gibbose subtriangular; anterior side obtuse, transversely costated; posterior side separated from the anterior by a crennulated carina, bicarinated, longitudinally striated, striæ granulated.

SYN. Trigonia costata (b.) *Lam. Hist. Nat. VI. pt. 1. p. 64.*

MUCH doubt is experienced upon examining a number of specimens of this Trigonia, they vary so considerably in length, or rather in the inclination the hinge line and costæ bear upon the large carina, and also in the form of this carina; and we are strongly inclined to believe with Lamarck that it is only a variety of Trigonia costata (Min. Conch. t. 35.) The costæ are rounded and prominent, they are rarely connected with the carina, but they are more often separated from it by a furrow. The carina is sometimes broad and low, sometimes it is elevated moderately, and at others it is very prominent and thin; it is always more or less crenated. The anterior side has two lesser carinæ, of which that nearest to the hinge is the most elevated; between them are many strongly crenulated ridges. The beaks are elegantly incurved.

Two of the figures (1 and 2) upon this Plate are from specimens found at Radipole, near Weymouth and selected from among several in the possession of our very kind Friend Miss Benett; at first sight they seem very distinct from the T. costata of the Ironshot or in-

between this and Neritina Schmideliana; Neritina Altavillensis * has also been pointed out as very analogous, but both these differ in those particulars, and also in having an oblique apex.

This Genus was pointed out by the Rev. George Cookson, and has been established by Mr. G. B. Sowerby, in his Genera of Shells, where it is first described. It is only known in a fossil state, among the organized remains of a former Ocean, thus differing in situation from the Neritinæ above alluded to.

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*Would it not be adviseable to adopt the Genus "Velates," proposed by Montfort, for these two shells, since they differ in many respects from the other Neritinæ?

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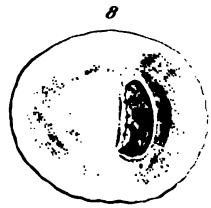

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1.4. Pileolus plicatus.
5.8. levis.

PILEOLUS plicatus.

TAB. CCCCXXXII.—*fig.* 1 *to* 4.

SPEC. CHAR. Obtusely conical, with diverging ridges extending to the edge; margin irregularly crenated; the centre of the base divided.

SYN. Pileolus plicatus, *G. B. Sowerby's Genera.*

THERE is an elevated margin to the flat cushion like centre of this species, and this centre is moreover divided into two parts by a slight sulcus that does not occur in the following; the height is not much less than the diameter of the base; the inner lip is strongly crenulated.

Found along with the following, but rare. Fig. 4, is magnified.

PILEOLUS lævis.

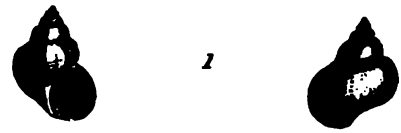
TAB. CCCCXXXII.—*fig.* 5 *to* 8.

SPEC. CHAR. Shell rather flat, smooth, with an entire margin.

SYN. Pileolus lævis, *G. B. Sowerby's Genera.*

MORE depressed in form than the preceding; the central portion of the base is convex, not circumscribed with a margin, nor divided as in P. plicatus; the inner lip is obscurely crenated; the upper surface is nearly smooth in general, but sometimes it has irregular indistinct furrows; in a word, the general plainness and flatness of its contour distinguishes it from the P. plicatus, Fig. 8 is a magnified representation.

This and the preceding have been long noticed by the Rev. George Cookson, whose diligent hands collected them along with several other very remarkable new shells out of a kind of Oolite, beneath the Bradford Clay at Ancliff, and also at Charter House, Hinton, in Somersetshire. The specimens kindly supplied by him have been represented in the plate employed both in my Brother's Genera of Shells, and in this Work.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TURBO conicus.

TAB. CCCCXXXIII.—*fig.* 1.

SPEC. CHAR. Ovato-conical, acute, umbilicated, transversely striated; whorls very convex; base rounded.

THE whorls, six in number, are so convex that they are almost depressed upon their upper parts; that last formed is considerably larger than the preceding ones; the apex is remarkably acute; the striæ are small and very numerous. In its general form this shell much resembles the Turbo tenebrosus of our shores, but differs in being sharply striated, and also in having an umbilicus which does not commonly occur in the Genus Turbo. There are several recent Foreign species somewhat resembling it, but they want the umbilicus and have much less ventricose whorls. Not unfrequently met with, replaced by Silex, in the Green-sand Formation.

TURBO rotundatus.

TAB. CCCCXXXIII.—*fig.* 2.

SPEC. CHAR. Ovate, subglobose, pointed, umbilicated, smooth; aperture rather pointed above, large.

A SMOOTH roundness of contour characterizes this shell; the aperture is equal to half the length of it, and is longer than wide; the spire is short and pointed.

Found with the above at Blackdown, but more rare.

The elongated form of the aperture in this species and the umbilicus together, present a considerable analogy to those fossils of the London Clay formation that have

been referred to the Genus Ampullaria, although they strongly resemble in their general habit, and are found in the same places as the fossil Naticæ, such as A. acuta, and A. acuminata; the want of a callus upon the columnellar lip, however distinguishes them all from the genuine Naticæ, and it seems desirable to establish a distinct Generic name to arrange them under. On the other hand, the shell before us is so closely related to its companion, which may perhaps hereafter be separated from Turbo, that it appears advisable at present to keep them together as links that may serve to connect two apparently very distant Genera, the Turbo and Natica. We are of course totally unacquainted with the habits of these animals, but judge from their associates that they were inhabitants of Salt-water.

MUREX Peruvianus.

TAB. CCCCXXXIV.—*fig.* 1.

SPEC. CHAR. Subfusiform, ventricose, smooth, with 15 thin costæ; beak a little recurved.

THE length of this Murex is about twice its width; the costæ are formed at the sutures; they are imperfectly raised into erect lamellæ, and each whorl has about 15; the beak is long and narrow.

Where the surface of this crag shell is most perfect, there are strong indications of erect lamellæ upon the sutures, but in general it is so much decayed that there are only obtuse costæ in their places. It strongly resembles Murex Bamffius, but has not so many sutures. The recent Murex Peruvianus of the Encyclopédie Méthodique (Murex Magellanicus b. Lam.) when worn differs in no other respect than size, we are of course obliged to consider them the same; the existence of fossil shells in the Crag, similar to recent species, has before been exemplified in several instances, and shews that part of the Crag, at least, is of very recent formation, if not alluvial.

A rare shell found at Woodbridge by Mrs. Cobbold.

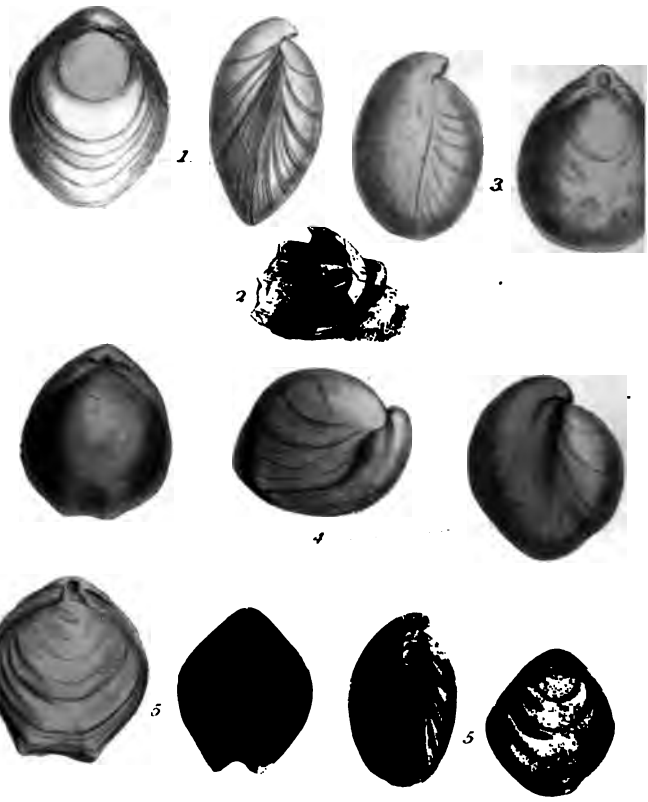
MUREX tortuosus.

TAB. CCCCXXXIV. fig. 2.

SPEC. CHAR. Turreted, subfusiform, largely cancellated; varies in three tortuose rows, with two or three knobs between each; whorls ventricose; beak contracted.

THE three rows of foliaceous sutures, are so much curved round the spire, as to produce the appearance of four; they continue along the beak where they are very broad; the three transverse ridges, upon the middle and lower parts of the whorls, are equal and not very prominent; the fourth, near the upper part of the whorl, is large and divided into two or three tubercles between each varix, which tubercles extend over one or two of the inferior ridges.

All the specimens of this shell we have met with are very much worn; it is very rare. We are indebted to Mrs. Cobbold's generosity for a finer specimen than remains in her own cabinet.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TEREBRATULA elongata.

TAB. CCCCXXXV.—*figs.* 1 *and* 2.

SPEC. CHAR. Oval, convex, smooth; margin even; beak incurved.

VERY slightly rhomboidal, the valves are equally and regularly convex; its length at once distinguishes it from T. carnea, tab. 15.

Fig 2. exhibits the appendages to the hinge.

Common in the soft Chalk about Norwich.

TEREBRATULA sphæroidalis.

TAB. CCCCXXXV.—*fig.* 3.

SPEC. CHAR. A depressed sphæroid, with a slightly produced beak.

THE surface of this clumsy shell is quite smooth, and the edges of its valves even.

Found at Dundry by G. W. Braikenridge Esq.

TEREBRATULA bullata.

TAB. CCCCXXXV —*fig.* 4.

SPEC. CHAR. Orbicular, ventricose, with a produced and incurved beak; front indented; depth greater than its width.

A REMARKABLY ventricose species; from its indented front there proceeds a little way towards the beaks, an obscure furrow in each valve, the edges retain a regular

level; in some states of preservation, the worn surface is minutely punctated, but this is seldom observable. It is distinguished from the globose variety of T. digona t. 96. by the narrowness of its front.

Collected in abundance at Nunney, near Frome, by the Rev. J. Ireland; it has also been found at Bridport.

TEREBRATULA emarginata.

TAB. CCCCXXXV.—*fig.* 6.

SPEC. CHAR. Subrhomboidal; the lesser valve nearly flat, the other convex; front defined by two angles or emarginate; edge becoming blunt by age.

THE inequality of the valves is a good character to distinguish this species by. When young the projections at the extremities of the short angular front, and which resemble those in T. digona, are hardly observable while in old individuals with almost flat borders, they are very conspicuous; the perforated beak has a decurvent keel upon each side of it.

A rather uncommon Terebratula, discovered at Nunney near Frome, along with several others, by the Rev. J. Ireland.

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TEREBRATULA globata.

TAB. CCCCXXXVI.—*fig.* 1.

SPEC. CHAR. Subglobose; front elevated with two obtuse folds, and slightly produced; surface often minutely punctated.

A DOUBLE sinus is formed in the lesser valve to receive the elevated front of the other, whose angles are obtuse; in the young state, as is usual throughout the genus, the folds or sinuses are less conspicuous; the whole surface is minutely and elegantly punctated; in most specimens the punctums are very conspicuous, but in some, whose surfaces have not been at all worn, they are indistinct; and when the outer coat is worn away, they are seen to unite into undulating lines: they result from the peculiar tissue of the shell, such are often to be met with in other species but not generally so near to the surface. The lower valve is regularly convex, with hardly any furrows leading from the sinuses in the front; the other valve has two slightly prominent ridges, that go a little way towards its centre.

Rather common at Nunney, near Frome; the Rev. J. Ireland has kindly supplied specimens.

TEREBRATULA perovalis.

TAB. CCCCXXXVI.—*figs.* 2 *and* 3.

SPEC. CHAR. Ovate, convex, with two elevated sinuses at the front, which is depressed between them; beak incurved.

THE two valves are equally convex and smooth; the margin obtuse; the sinuses produce three very obtuse ridges, two in the upper valve, and one in the front of

the lower; the regular oval form rather pointed at the beak end is characteristic, and distinguishes it constantly from T. biplicata α (tab. 90.) of which three views are given in tab. 437 figs. 2 and 3 for comparison.

Fig. 2 is a young shell, it is rather shorter, as usual, than the full grown one fig. 3. They are from Dundry, by favour of G. W. Braikenridge, Esq.

TEREBRATULA maxilata.

TAB. CCCCXXXVI.—*fig.* 4.

SPEC. CHAR. Subquadrangular, convex; two acute rising sinuses in the front, and one obtuse sinus on each side; three conspicuous furrows in the upper, and two in the lower valve; front rounded.

WELL distinguished from T. intermedia t. 15. by the depth of the sinuses, and consequent furrows which extend at least half way to the beak; in some specimens the two central ridges between the furrows are very prominent, and approach more nearly together than in the specimen figured, such shells are also generally longer shaped; it is always smaller than the T. intermedia. A front view of the sharply sinuated edge, reminds us of the closed jaws of a carnivorous animal, whence the specific name.

Sent from Nunney by our good Friend the Rev. J. Ireland; the longer variety we have from Farley.

TEREBRATULA Sella.

TAB. CCCCXXXVII.—*fig.* 1.

SPEC. CHAR. Subquadrangular, convex; front considerably elevated, narrow, emarginated when old; sides depressed, slightly rounded.

WHEN young this shell is rather trigonal in consequence of the length of the sides and roundness of the front; as it grows older it becomes squarer, the front being more produced as well as more elevated; the beak is very slightly curved; the length and breadth are nearly equal; the edges always sharp.

A characteristic shell of the Kentish Rag Stone; a series of specimens were collected in the celebrated quarries of that stone at Chart, near Ashford, in Kent, by A. Power, Esq. several years ago. I have it also from Sandgate, where a mass of Stone was found by Mr. Goodhall, containing several full sized individuals, one of which contained crystallized Quartz. The specimen figured was said to come from Hythe.

TEREBRATULA obtusa.

TAB. CCCCXXXVII.—*fig.* 4.

SPEC. CHAR. Suborbicular, rather depressed; front broad, elevated; edge obtuse.

THE lesser valve is rather wider than long; but the projection of the beak of the other valve makes that longer than wide; their surfaces are equally and regularly convex, except near the edges, where they are rather suddenly bent so as to produce a squarish margin.

I have only seen one individual of this Terebratula; it was sent from Cambridge along with many specimens of T. biplicata, one of which has been figured upon Tab. 90.

TAB. CCCCXXXVII.—*figs.* 2 *and* 3.

These are representations of a young and a full grown specimen of T. biplicata, in views that appeared necessary to point out the difference between it and T. perovalis, and also between it and the shells formerly con-

sidered as varieties of it, but which differ in several points, almost, if not quite, enough for them to be considered as forming a distinct species.

The surface of the casts of these specimens is very distinctly punctated; they are from Cambridge; I have others also from Limerick by favour of S. Wright, Esq.

TEREBRATULA obesa.

TAB. CCCCXXXVIII.—*fig.* 1.

SPEC. CHAR. Ovate, gibbose, front elevated considerably, with a slight broad sinus in the middle; beaked valve regularly convex to the edge; beak incurved, short.

A LARGE gibbose shell, rather more obtuse at the front; the lesser valve is depressed a little on each side of the elevated front, and also, near the edge, into the central sinus, otherwise both valves are very regularly convex; the width and depth are each about two thirds of the length; the beak has no keels upon its sides.

From Chalk, at Norton Bevant, near Warminster. It very strongly resembles Anomia ampulla of Brocchi, p. 446. but that not being a Chalk-fossil is probably distinct; I have not seen a specimen.

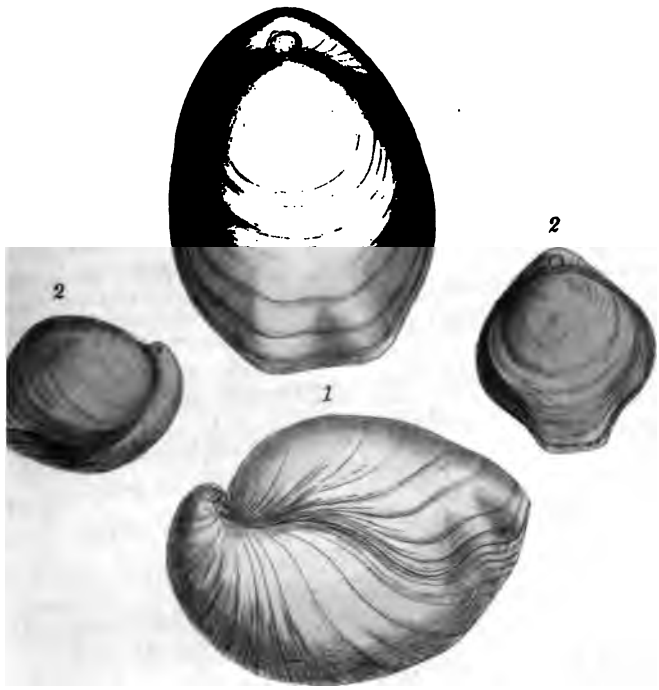
TEREBRATULA bucculenta.

TAB. CCCCXXXVIII.—*fig.* 2.

SPEC. CHAR. Rather square, with rounded sides, convex; front produced, truncated, very slightly elevated; beak short.

THE valves of the Terebratula are nearly equal, thin edges almost level, and not sinuated; the front is so produced as to give the sides an inflated appearance, like the cheeks of a Fox; the length and breadth are nearly equal; the surface smooth.

Sent from the neighbourhood of Malton; it has much the aspect of some Green-sand fossils, but is not siliceous. I know not what stratum it comes from. Its characters are very conspicuous.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MYTILUS edentulus.

TAB. CCCCXXXIX. *fig.* 1.

SPEC. CHAR. Elongated, smooth; disk obtusely keelshaped; beak sharp; posterior side nearly straight; no tooth in the hinge.

VERY nearly of the same form as the common Mussel, but the beak end is deeper, much more keel-shaped, and a little curved; the sides are almost parallel; the front is rounded, and obtuse; the hinge line straight.

A small siliceous cast from Blackdown.

MYTILUS lanceolatus.

TAB. CCCCXXXIX.—*fig.* 2.

SPEC. CHAR. Lanceolate, slightly curved, smooth; disk, keel-formed; posterior side flat; beaks acute.

A VERY elegantly formed shell; the anterior side is a regular sweep from the beaks to the front without any angle marking the termination of the hinge; within each beak is one very long lamellar tooth.

A siliceous cast found at Blackdown: it enriches the Cabinet of L. W. Dillwyn, Esq. and appears to be very rare, as only one specimen has been found.

MYTILUS sublævis.

TAB. CCCCXXXIX.—*fig.* 3.

SPEC. CHAR. Oblong triangular; rather curved; disk obscurely keelshaped; front straightish; beaks acute; lines of growth rather prominent.

THE beaks of this are more pointed than those of the common Mussel; it is also flatter towards the front and anterior side; the hinge line is straight, half the length of the shell.

Very imperfect specimens occur in the Cornbrash limestone at Felmarsham.

INOCERAMUS.

EN. CHAR. A free, more or less inequilateral, irregular, bivalve; hinge a marginal, subcylindrical, transversely sulcated callus, supporting a ligament; beaks conspicuous, at one end of the hinge.

HELL longitudinal, more or less gibbose, sometimes arly equalvalved; but sometimes with very unequally ngated beaks; the anterior side is more or less proced, and supports the straight hinge callus upon its ge; the posterior side is sometimes lobed, at other es flat or convex; the hinge consists of a more or s cylindrical callus, produced by a rapid and very siderable increase in the thickness of the shell at its ge; it is concave on one side, and transversely sulted to receive the ligament; it is the same in both lves; there is no opening for the passage of a byssus; e shell consists of closely pressed laminæ, composed of rpendicular fibres; the edges of these laminæ form ncentric lines upon the surface, but are not prominent; me species have a lining of pearl. In all, the shell is ry thin at and around the beaks, but becomes very ick at the edges, near the hinge, and towards the front. This Genus may be divided into two sections, the first ntaining the species with short beaks, and nearly equal lves; the second those with elongated beaks and unual valves.

Nine years have elapsed since my lamented Father, in paper read before the Linnean Society in 1814, made own the characters by which this Genus formerly rerred to Patella, and afterwards, in consequence of its rous stucture, to Pinna, might be recognized; but in nsequence of that paper not being printed until 1823, ich uncertainty has existed, and several misrepresen-

tations been published;* the Genus does, however, seem uniformly admitted as distinct. Its great resemblance to Crenatula, has sometimes induced me to think that it ought to be joined with that Genus; but a close comparison of the hinges in many specimens of different species, all of which are wholly destitute of the spoon-like processes characteristic of Crenatula, joined with a consideration of its prominent beaks and gibbous form, has confirmed my Father's opinion, and proved the accuracy of his judgment. Brongniart not knowing which species was the type of this Genus, and thinking the very prominent, unequal beaks of the two species belonging to the second section, a sufficient reason to distinguish them from it, has placed it in a newly formed Genus, which he has called Catillus; but he probably was not sufficiently acquainted with the hinges of the species he still retains as Inocerami, to perceive their resemblance to the type. As to the Genus Perna, its species are of a much more foliated structure, and have a considerable sinus for the passage of the byssus; it is, therefore, readily distinguished.

The name Inoceramus, from ἴς (fibra) and κέραμος (testa) is justly objected to by scholars, as an improperly formed word, and not expressive of "fibrous shell" which it was intended to signify; it therefore ought to be changed, but it has been in use so long, that it has become general; and, if I were even inclined to act the part of an innovator, to do so would, I think, only be adding to the confusion already existing in consequence of Brongniart's naming the type of the Genus, Catillus, a name not applicable to the whole of the species.

This Genus occurs in many strata from the Mountain Limestone to the Chalk.

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*See Mr. Mantell's observation upon the knowledge of the structure of this shell, page 212. and compare it with the paper in Linn. Trans. Vol. XIII. page 455, &c.

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INOCERAMUS Cuvieri.

TAB. CCCCXLI.—*fig.* 1.

SPEC. CHAR. Obovate, curved, convex, with transverse, distant, obtuse waves; posterior side concave, with a small lobe near the beak; beaks very short, acute.

SYN. Inoceramus Cuvieri. *Linn. Trans. v. XIII. p.* 457. *Mantell Geol. Sussex,* 213?
Catillus Cuvieri, *Cuvier and Brogniart Geol. de Paris, ed.* 1822. *p.* 386.

THIS gigantic species of Inoceramus is the first that has been defined; it is supposed to acquire, sometimes, four or five feet in length; it is very irregular in form, but is generally one third longer than wide, and not very deep; it is curved towards the posterior side, in which is a small, rounded, nearly smooth lobe; the beaks are not all raised from the hinge, so they cannot be called reflexed or curved, but they are sharp. The edges of the laminæ composing the shell, or lines of growth, are placed at regular distances; between them the surface is smooth; it has a long hinge line.

It is extremely difficult to distinguish the species of the Genus before us; they are not merely variable in form, but so brittle, that fragments only are commonly found. The general flatness, and nearly circular disposition of the lines of growth will, however, go far towards pointing out the present species; the small posterior lobe, and short depressed beaks complete its characters. In consequence of the posterior lobe not being mentioned, and of some other differences in the specific character

given by Mr. Mantell, I have been obliged to add query to his quotation: it is probable that his *I. latus* is a flat variety only, for some specimens of J. Cuvieri are without waves for a considerable extent, and then have several large ones.

Common in Chalk every where. The specimen figured, is the same given in the Linnean Transactions; it was picked up in a Chalk Pit near Royston by Mr. Sowerby, and is the most perfect yet known. Fragments attached to, or imbedded in Flints, and casts of large portions in Flint are not rare among alluvial gravel.

INOCERAMUS Brongniarti.

TAB. CCCCXLI.—*figs.* 2 *and* 3.

SPEC. CHAR. Oblong, gibbose, with large transverse undulations; anterior side angular, lobed; posterior side, flat, truncated and smooth; beaks small, curved and pointed.

SYN. Inoceramus Brongniarti, *Mantell p.* 214, *No.* 85. I. Lamarckii, *Mantell, tab.* 27. *fig.* 1. *and p.* 214. *no.* 84 *in part.*

WELL distinguished by the flat, broad, cordate form of the posterior side, upon the borders of which the lines of growth and larger waves that occupy the other part of the shell are completely lost; each valve is nearly as deep as it is wide; its length is rather less than twice its width.

If we may judge from the fragment of a hinge that is here figured, and which, from the flatness of the posterior side, seems to be of the same species with the small example; this is as gigantic a shell as the last,

but much deeper. The flat side and the want of longitudinal furrows shew that it is not I. Lamarckii of Parkinson, in the Geological Trans. v. V. p. 55. with which, according to his figure, Mr. Mantell has however confounded it. It agrees better with the description of Mantell's I. Brongiarti, but not well with his figure of that species.

In Chalk, not uncommon.

The hinges here figured, serve well to illustrate the Generic characters.

INOCERAMUS cordiformis.

TAB. CCCCXL.

SPEC. CHAR. Equalvalved, heartshaped, transversely and interruptedly waved; beaks large, incurved; anterior side angular.

THE posterior side of this shell is not defined; but rises gradually from a hollow beneath the incurved beaks; the transverse waves are very high, and irregularly interrupted; the width and depth are equal and but little exceeded by the length. The general form reminds us of Isocardia Cor, only that the hinge line being produced, gives an angular form to the anterior side.

The figure is taken from a remarkably fine specimen, filled with Flint, that was found at Gravesend.

INOCERAMUS mytiloides.

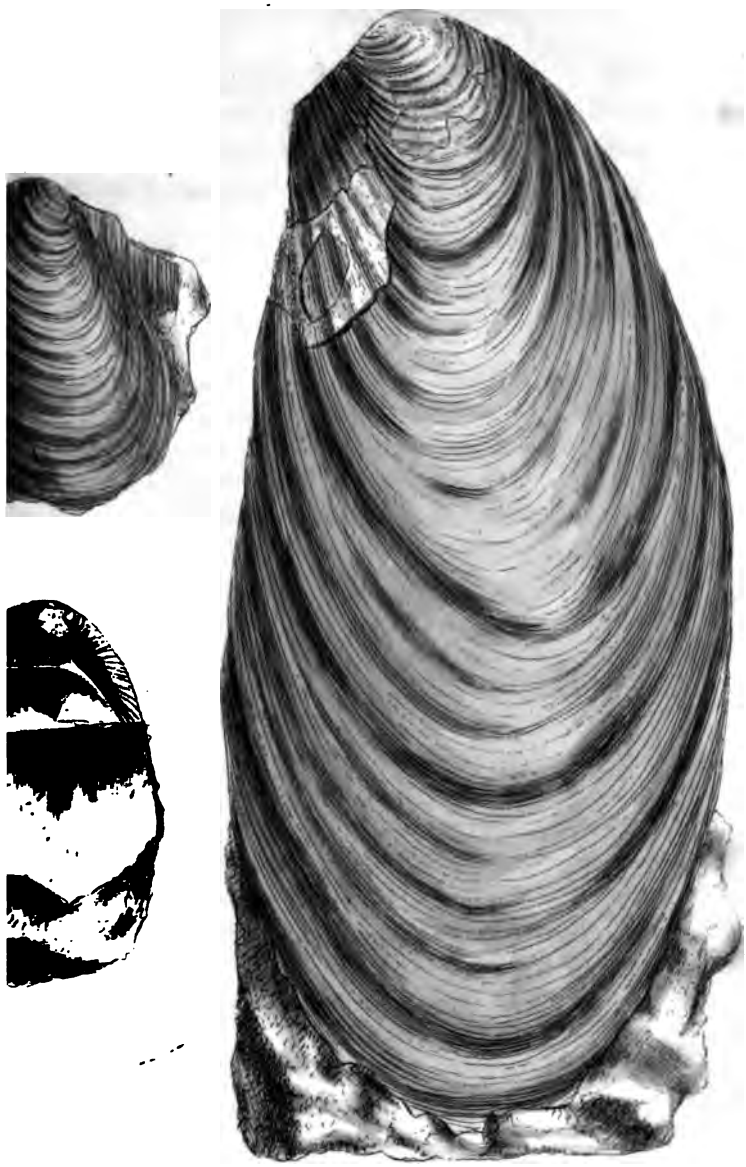
TAB. CCCCXLII.

SPEC. CHAR. Equalvalved, elongated, depressed, with slight, irregular waves; convex and obtuse towards the beaks, hinge line oblique; anterior side produced; beak short.

SYN. Inoceramus mytilloides, *Mantell p.* 21[illegible] *t.* 28. *f.* 2.

A SMOOTH, slightly waved surface, elongated form, and brownish pink colour, constantly distinguish this species; the beak end is remarkably blunt, although the beaks themselves terminate in a sharp point.

Peculiar to the lower Chalk; it occurs in Wiltshire, Sussex, &c. This is the species Miss Benett has been successful in clearing the hinges of, after the suggestion of Mr. Sowerby, as mentioned in the Linnean Society's Transactions. The large figure is from a specimen in Miss Benett's Cabinet.



CRENATULA.—*Lamarck.*

EN. CHAR. **A subequalvalved, bivalve, flatish, lamellose, rather irregular; hinge lateral, linear, internally marginal, crenulated; crenulæ arranged in a series, callous, spoonformed, receiving a disjointed Ligament.**

IE recent species of this Genus are flat shells, and ıposed of Lamellæ, of a distinctly fibrous structure, ich do not project beyond the surface, but mark upon numerous, sharp lines much resembling those upon ɔceramus; the hinge contains the characters in which differs, it consists of a number of spoonlike proses, some of which, near the beaks, are placed close ;ether, while others are distant, they receive debed portions of the ligament, and are not supported ɔn a distinct callus that, after being bent, extends bend the beaks as in Inoceramus; those processes that ı united together near the beaks, have still a furrow ;ween the edges of their upper hollow sides, to which ligament is attached; this sulcus does not exist in ɔceramus, where one continued credulated grove in :h valve appears constructed to receive an undivided ament; in Crenatula there is no great disproportion thickness between the shell, about the beaks and mar-ı. Perna is distinguished from both the above menned Genera, by having a sinus for the passage of a ssus.

For other particulars my Brother's work upon Genera ıy be consulted; the above are sufficient to discrimite fossils by.

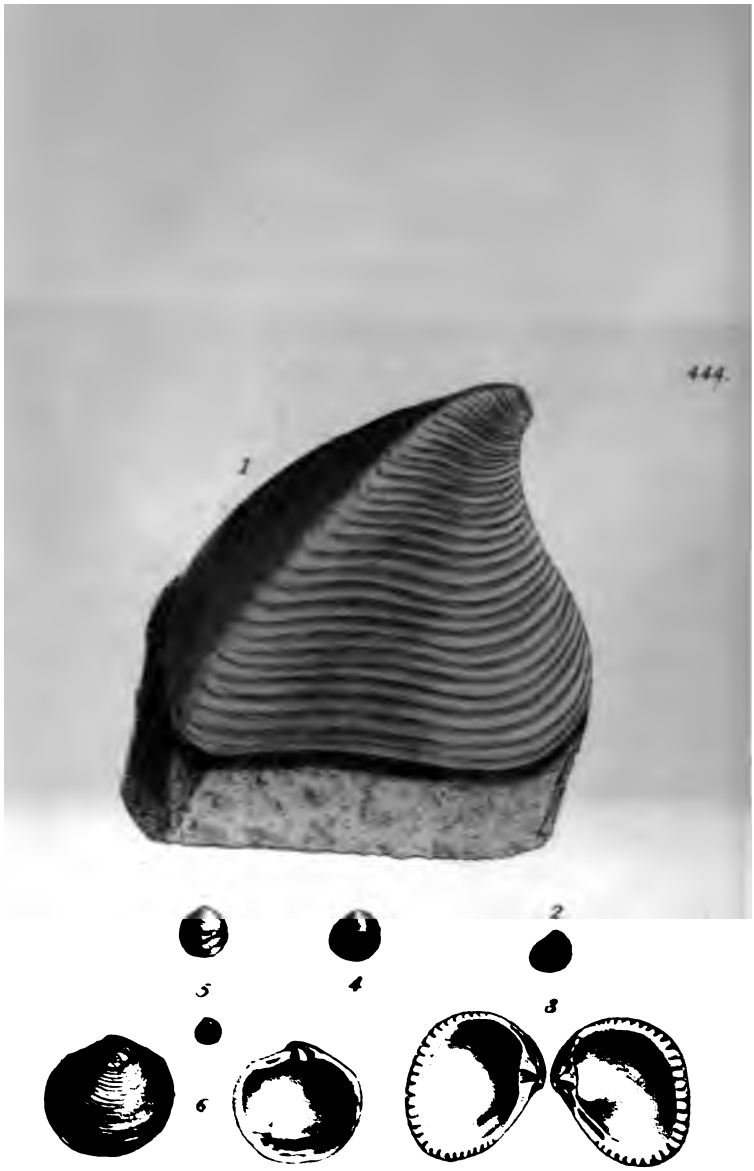
CRENATULA ventricosa.

TAB. CCCCXLIII.

Spec. Char. Ovate, elongated, ventricoso-carinated; posterior side impressed; beaks pointed.

Each valve approaches towards keelshaped in consequence of its great depth and the flatness of the posterior side, which is also nearly straight; near the beaks the posterior edges are a little produced, but not enough to form a lobe; the front is rounded as well as the anterior side; hinge line short.

There are but 5 or 6 crenulæ of the hinge remaining in the specimens before us, but they are perfect enough to shew the characters of Crenatula, although the shell is much more gibbose than any known recent species. The one figured came from Husband Bosworth; it was lent Mr. Sowerby by the Rev. W. D. Conybeare: at one end of it is a young individual. Another specimen from Bennall or Barnall Wood, near Gloucester, shews the internal pearly coat; it was presented by Miss Warne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ASTARTE trigonalis.

TAB. CCCCXLIV.—*fig* 1.

SPEC. CHAR. Cordato-triangular, depressed, transversely sulcated; beak pointed; anterior side separated by an angle, smooth.

THE posterior edge is concave near the projecting beak, and rounded into the front; the sulci are numerous, not deep, they terminate at a ridge that defines the anterior side; just before this ridge, the surface is rather concave; the shell is thick.

Not being able to clear away the stone from the inside of the only specimen that we have met with of this curious shell, it is not without some doubts that it is referred to the Genus Astarte, but its external form agrees well with several species of that Genus.

It is one of the treasures which Mr. Johnstone has kindly allowed to travel from his Cabinet.

It was found at Dundry.

ASTARTE orbicularis.

TAB. CCCCXLIV.—*figs.* 2 *and* 3.

SPEC. CHAR. Lenticular, with many concentric, reflected lamellæ upon its surface; edge smooth.

VERY nearly orbicular; there is a slightly projecting angle at the end of the straight hinge line; the concentric lamellæ are not very much elevated, they are very numerous.

A minute shell, found with the following in the same stone that produces the Pileopsis, at Ancliff.

The larger figures are magnified.

ASTARTE pumila.

TAB. CCCCXLIV.—*figs.* 4, 5 *and* 6.

SPEC. CHAR. Obliquely obovate, slightly convex, with numerous concentric ridges; edge crenated within.

THE posterior side of this shell is very small with a semicircular edge; the anterior side is produced, and obtuse; the ridges are narrow, slightly elevated, and equal to the spaces between them; by age the shell becomes longer than wide; the edge is strongly crenulated within.

Fig. 4, shews an old individual; fig. 5, a middle sized one; fig. 6, is an enlarged representation of the insides of the valves.

Found at Ancliffe by the Rev. George Cookson.

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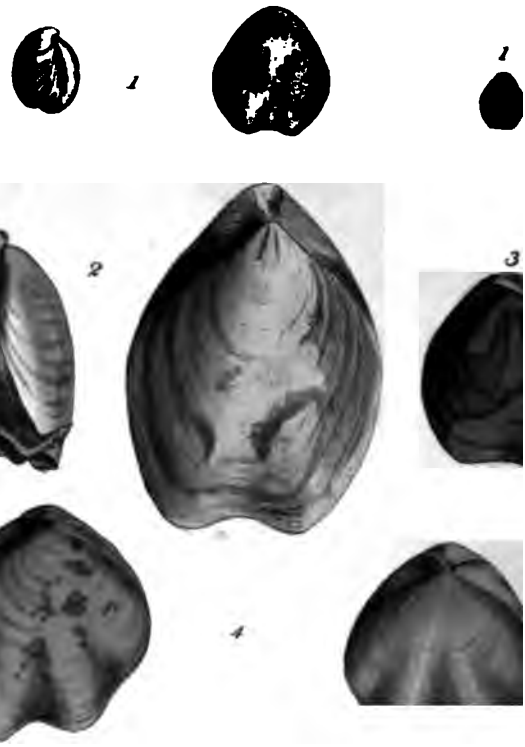
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TEREBRATULA triquetra.
TAB. CCCCXLV—*fig.* 1.

SPEC. CHAR. Suborbicular with a produced, incurved beak; valves equally convex; front slightly indented; beak obtusely keel-shaped; with carina on each side.

THE length and breadth of the upper valve are equal; the edge is level and sharp, and not much thickened by age; the indentation in the front produces a slight concavity of the surface, that extends more or less from the edges, interrupting the regular convexity of both valves; the larger valve is besides obtusely keelshaped near the beak, which has also a sharp ridge upon each side of it, hence the perforation is triangular; the surface is remarkably smooth.

Found at Felmarsham by Miss Ludlow.

TEREBRATULA indentata.
TAB. CCCCXLV.—*fig.* 2.

SPEC. CHAR. Elliptical, smooth, more or less gibbose; valves equally convex; front deeply notched; beak small, much incurved.

In the young state this Terebratula, like many others, shews but slight signs of the marginal notch; when full grown the notch is deep and obtuse-angular; broad furrows extend from it about one third the length into each valve; its length is nearly twice its width.

Found abundantly in a dark greenish grey limestone at Banbury, and several other places. The two sides are not always equal.

TEREBRATULA Sacculus.
TAB. CCCCXLVI.—*fig.* 1.

SPEC. CHAR. Obovate, gibbose, with a deep channel along the larger valve; front indented.

SYN. Conchiliolites Anomites Sacculus. *Martin Pet. Derb. tab.* 46, *figs.* 1 *and* 2.

A SMALL almost globose shell, well distinguished by the broad and deep furrow, that divides the larger valve into two lobes; the other valve has also, near its edge, a con-

cave space, in the middle of which is a slight elevation proceeding from a minute sinus in the edge of it.

From the Derbyshire Limestone; the specimen figured formerly belonged to Mr. Martin, who says the species is common, particularly at Eyam and Middleton; we have it also from near Matlock, on the road from Derby.

TEREBRATULA lentata.

TAB. CCCCXLVI.—*figs. 2 and 3.*

SPEC. CHAR. Elliptical, subrhomboidal, rather depressed; front truncated and indented; edges sharp.

Var. β, Small, blunt edged, and obovate. Fig. 3.

VALVES nearly equal, not very convex, rather convex near the indented front edge; the width is about two thirds of the length. The variety β is always smaller, shorter, and deeper; its small valve is also less concave towards the front.

The large figure represents a specimen from Limerick, presented by S. Wright, Esq. the smaller one, another from near Dublin. I have also seen another from Bristol. Fig. 3 is the small variety, sent by Mr. Moore from the neighbourhood of Dublin. All come from the black Limestone.

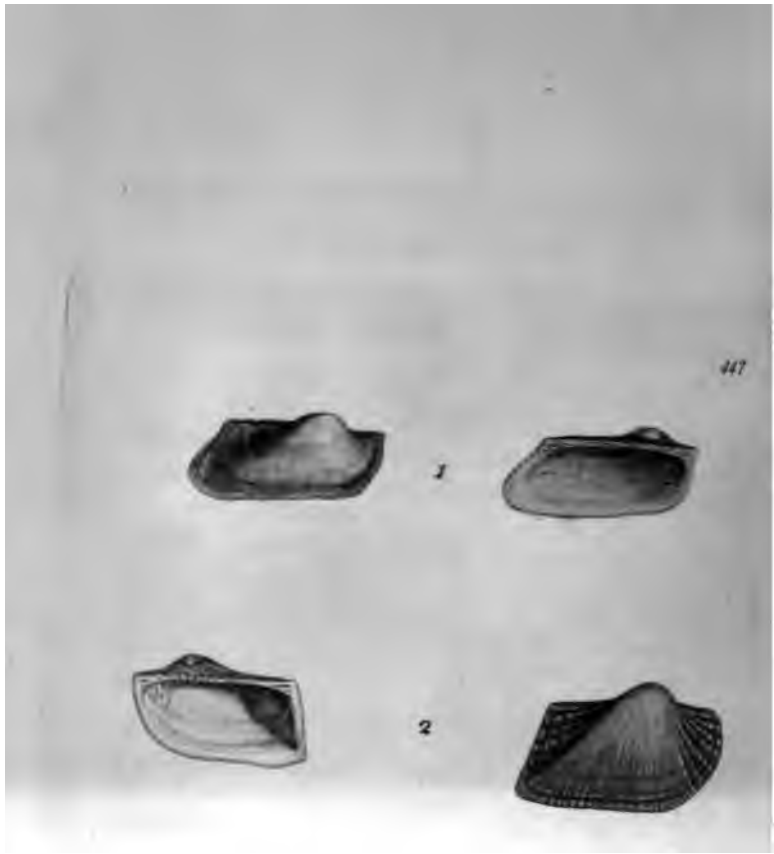
TEREBRATULA cornuta.

TAB. CCCCXLVI.—*fig* 4.

SPEC. CHAR. Short, convex, with blunt edges, four lobed; the two middle lobes produced, the others very short.

IRREGULARLY five sided; the two sides that meet at the beak are convex, the others concave, the front very deeply so; the lateral lobes are rather obscure, the others, obtusely pointed, and forming ridges that diverge from near the centre of the valves, in each or which they are equal; the beak is short, incurved, and has a sharp keel on each side of it; the surface is smooth and shining. One of the prominent lobes is often less produced than the other, a resemblance is then formed to the unequally elongated horns of a snail, whence the name.

From the coarse Limestone of Ilminster, by the kindness of E. Strangeways, Esq.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CUCULLÆA elongata.

TAB. CCCCXLVII.—*fig.* 1.

'EC. CHAR. Elongated, subcylindrical, finely striated; anteriorly pointed; posterior side very short.

EARLY three times as wide as long; the valves are so :p as when closed to form an irregular cylinder; the ks are small, incurved, and distant from the anterior remity; the striæ longitudinal and very fine.
Collected at Cross Hands by the Rev. Mr. Steinhauer; shells appear to have been found in the soft parts of Limestone, as they are empty.

CUCULLÆA costellata.

TAB. CCCCXLVII.—*fig.* 2.

EC. CHAR. Transversely oblong, gibbous, longitudinally striated; anterior lobe wing-shaped, ribbed; posterior side rounded, ribbed; beaks incurved, distant from each other.

E general outline of this shell is an oblique parallel-am, twice as long as wide, placed transversely; the E are sometimes distant, at others very numerous, slightly decussated by the lines of growth; each emity is distinguished by 8 or 4 small, sharp, rugged , the anterior ones have strong elevated striæ between n; the anterior side or lobe is distinguished by the -like termination of the central portion of the surface. iliceous casts of this neat shell are not unfrequent at ckdown; it is also found at Collumpton, in Devon-e.

CUCULLÆA minuta.

TAB. CCCCXLVII.—*fig.* 3.

Spec. Char. Elongated-ovate, convex, striated, anteriorly submucronated; anterior lobe small, separated by a keel; beaks nearly close.

Rather more than twice as wide as long, and smallest at the extremities; the ridge that defines the anterior lobe forms a projecting angle upon the margin; the anterior side is very obliquely truncated; the valves are rather flat.

Found along with a great number of small and even minute shells, among which are the Pileoli (tab. 432.) in limestone at Ancliff, by the Rev. George Cookson. Many of the shells that accompany it appear at first sight to be the young of larger species, but upon a careful examination they will perhaps prove as distinct as the one before us.

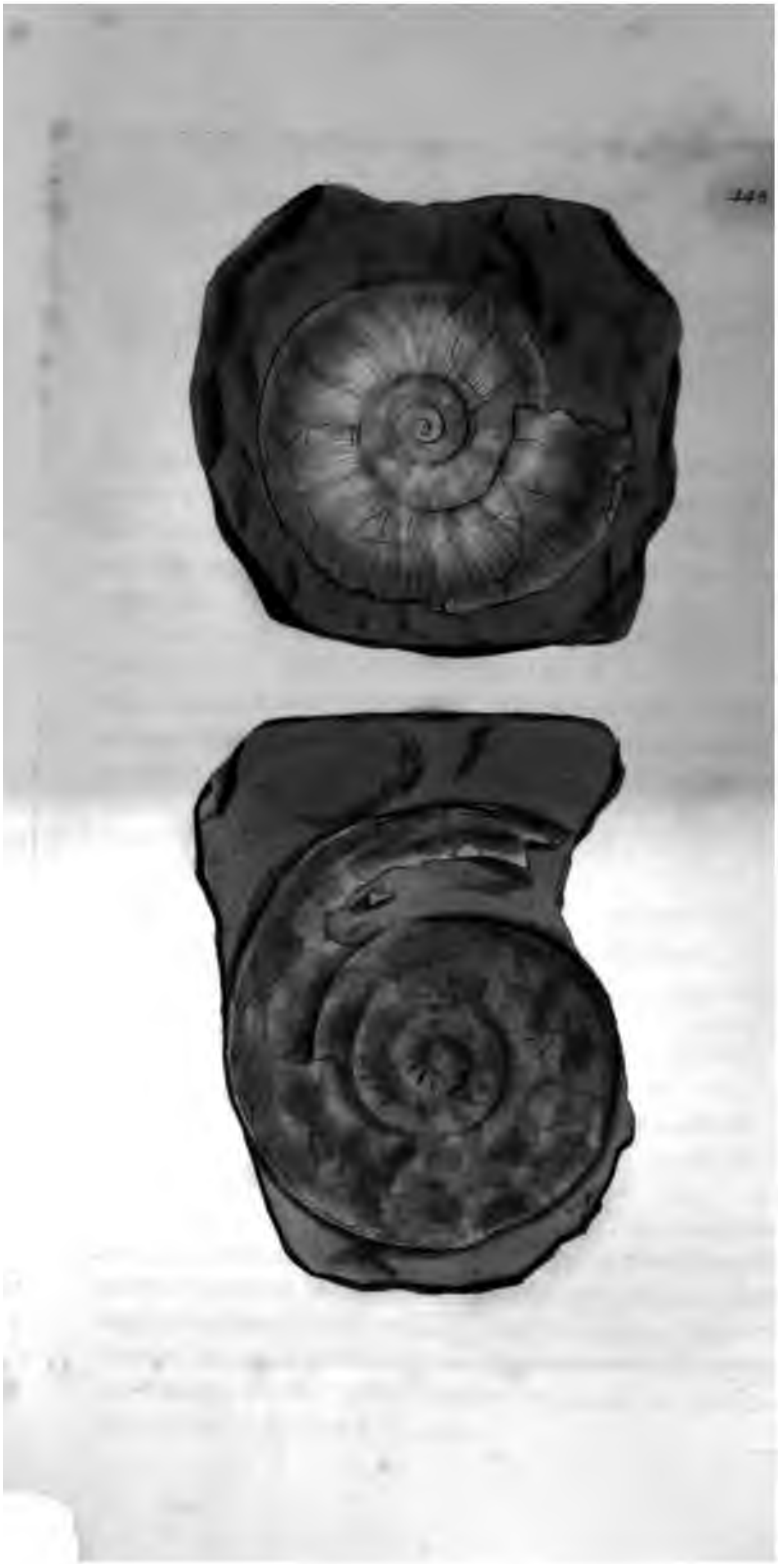
CUCULLÆA rudis.

TAB. CCCCXLVII.—*fig.* 4.

Spec. Char. Transversely oblong, convex, rugged and longitudinally ribbed; beaks incurved, nearly close together; anterior lobe not defined.

Large rugose ridges occupy both sides of this shell, the middle is deeply striated; the anterior side is not distinguishable from the middle portion of the valve.

A very imperfect specimen, but the only one we have seen; it is in the Rev. Mr. Cookson's suite of Shells found in the limestone at Ancliff. We are happy to have it in our power thus to acknowledge our thankfulness for the loan of the whole collection for examination; it is very remarkable for the great number of species of Shells, Corals and Crinoidea it contains.



AMMONITES Planorbis.

TAB. CCCCXLVIII.

Spec. Char. Discoid, smooth; whorls three or four, two thirds exposed.

Few shells are more plain in their appearance than this unornamented Ammonite, for its situation and analogy to the following leave no doubt of its being an Ammonite, although we have not met with the septæ. It is always found so much flattened that little can be added to the specific description, for its thickness and the form of the whorl cannot be ascertained; we can only see that the whorls encrease rather rapidly in diameter, that they have no radii or tubercles, and that the striæ of growth are very fine. The inside pearly coat is nearly all that is preserved, and that is sometimes very highly iridescent.

Not of very rare occurrence in a kind of slaty Clay belonging to the Lyas beds, at Watchet. Fig. 1 is from that locality.

Fig. 2 is taken from, a high coloured individual said to be from Lincolnshire, placed in Mr. Sowerby's cabinet, by the Rev. R. B. Franciss.

AMMONITES Johnstonii.

TAB. CCCCXLIX.—*fig.* 1.

SPEC. CHAR. Discoid; whorls 6 or 8 two thirds exposed, with numerous, short, straight costæ upon the exposed parts; front plain.

THE numerous, very short, rounded, ribs or rather perhaps elongated tubercles, do not reach quite across the exposed parts of the whorls; they are not to be found upon two or three of the central whorls which however may be distinguished from those of the last species by their proportionally slow increase in size.

Like the last, this species is only found very much compressed and deprived of its external coats; the pearl that remains is excessively brilliant, and full of color. ——Johnstone, Esq. has kindly lent me the splendid specimen here figured; it was fortunately extracted from the slaty beds of Lyas Clay, at Watchet without injury. Several other Ammonites occur in the same place, that probably belong to species found in other parts of the Lyas range, but they are so flattened it is difficult to recognize them.

AMMONITES parvus.

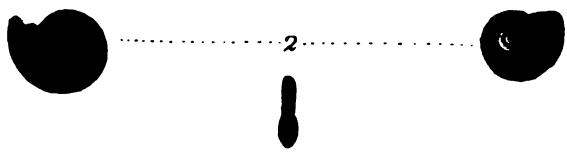
TAB. CCCCXLIX.—*fig.* 2.

SPEC. CHAR. Discoid; surface marked with diverging, undulating striæ; inner whorls exposed; front rounded; aperture oval.

FOUR or five volutions almost wholly exposed, and but gradually enlarging, constitute this little Ammonite; the striæ are elevated, obtuse and numerous, they reach over the front; the aperture occupies one third of the longest diameter.

Casts of this shell composed of Pyrites have been in Mr. Sowerby's Museum ever since 1806 without decomposing; they were found at the depth of 80 feet in a newly sunk well at Tunbridge.

1



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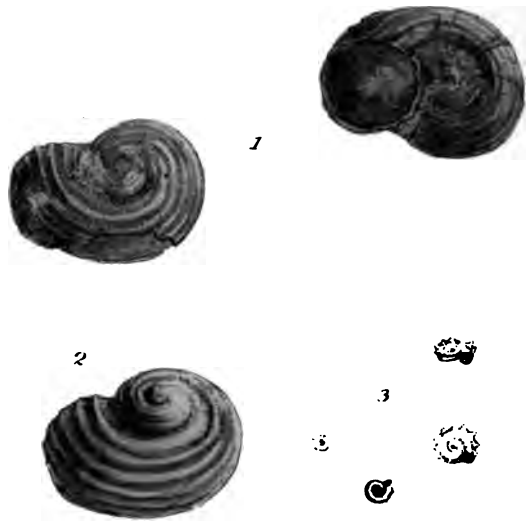
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EUOMPHALUS fimatus.

TAB. CCCCL.—*figs.* 1 *and* 2.

EC. CHAR. Conical, very short; ornamented with many spiral threads united by more numerous transverse lines; umbilicus rather small.

many respects this resembles E. discors (tab. 52.) but easily distinguished by the involute threads upon its er surface, and the slight elevation of the transverse s, which are very regular and close, and do not give he rough appearance that characterizes the upper face of that species.

ig. 2 represents an apparently water worn specimen, hich the spiral ridges only remain; it serves to shew general form of the short spire.

rom Dudley, in the possession of ——— Johnstone, . of the Hotwells, Bristol.

EUOMPHALUS coronatus.

TAB. CCCCL.—*fig.* 3.

EC. CHAR. Discoid, flat above, with broad flat, pointed spines around its edge; concave beneath.

VERY small, flat shell; the upper part of each whorl is , the lower rounded; along the middle is a row of

flat delta-formed spines that are a little turned upwards: the first portions of all the whorls are arranged in the same plain, so that the spire is not at all elevated; young shells are slightly undulated upon the surface.

From Ancliff, in the Rev. George Cookson's cabinet. This species seems to unite the Genera Encomphalus and Delphinula.

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5

AMMONITES lævuscutus.

TAB. CCCCLI.—*figs.* 1 *and* 2.

SPEC. CHAR. Discoid, carinated, umbilicated, obscurely radiated; carina distinct; radii waved, alternately long and short, slightly elevated; umbilicus small, exposing parts of the inner whorls; aperture sagittate.

ONE half of the diameter of the shell is occupied by the aperture, a third of the other half by the umbilicus, in full grown individuals; in young ones the umbilicus is larger. The front is obtuse with a large prominent keel in the middle of it; the sides are rather convex marked with waved, elevated radii, that are broader and less conspicuous on the outer whorls of the full grown shells. In young shells the aperture is oblong, rather square; as the shell grows older, the aperture becomes longer, more deeply notched by the preceding whorl, and narrower towards the front.

Found in the inferior or Ironshot Oolite, at Dundry by G. W. Braikenridge, Esq. to whose liberality we are indebted for a series of specimens.

AMMONITES corrugatus.

TAB. CCCCLI.—*fig.* 3.

SPEC. CHAR. Discoid, carinated and umbilicated, strongly radiated; carina distinct; radii waved, sometimes furcated, elevated; umbilicus broad, exposing parts of the inner whorls; aperture obovate; front obtuse.

RESEMBLING the last, but thicker, with more prominent radii, and a broader front.

From Dundry, with the A. laeviusculus.

AMMONITES varicosus,

TAB. CCCCLI.—*figs.* 4 *and* 5,

SPEC. CHAR. Depressed, costated; inner volutions exposed; carinated when young, and furnished with an irregular row of tubercles upon the inner edges of the whorls; costæ curved, large, obtuse, in old shells crossing the front; carina distinct; aperture oblong.

IN the very young state this Ammonite like many others, appears to be nearly plain, but has a distinct carina; as it grows older, a series of crescent shaped, nearly close ribs appear on each side of the keel, and a few small tubercles arise upon the inner edges of the

453.

whorls; by degrees the ribs that are formed are long enough to join the tubercles, and the keel gradually becomes smaller until the ribs are no longer divided by it; lastly, the keel entirely disappears, and the ribs become large, broad and blunt. The aperture is about one third of the diameter of the shell in length; sometimes two ribs join one tubercle.

Casts of this variable Ammonite are by no means rare in the Sandstone of Blackdown; the space once occupied by the shell itself, which appears to have been thin, is filled by nearly transparent silex, that has, partly in consequence of its tenuity, a slightly pearly lustre, and forms an elegant petrifaction. The difference between the young and old shells is so great, that they are generally taken for distinct species, but the centre of the old shell often shews the form of the young one.

AMMONITES Turneri.

TAB. CCCCLII.

SPEC. CHAR. Depressed, radiated, carinated, a furrow on each side of the keel; inner whorls exposed; radii numerous, equal, curved towards the front; aperture oblong, quadrangular.

VOLUTIONS about five, the inner ones almost wholly exposed; the radii are almost straight until they are rather suddenly bent towards the front; the aperture is less than one third of the diameter of the last whorl in length.

The more exposed whorls, squareish aperture, and differently curved radii, distinguish this from A. Brookii, *tab.* 190. to which it bears a strong resemblance.

The upper figure represents a cast in Pyrites among Clay from Wymondham Abbey; it is probably out of an alluvial bed. We are indebted to our kind Friend, the celebrated Botanist, Dawson Turner, Esq. for it. The lower figure is from a very much compressed specimen, in which the shell remains imbedded in a slaty clay. Found at Watchet, where this species does not appear to be very common.

AMMONITES rotiformis.

TAB. CCCCLIII.

SPEC. CHAR. Depressed, ribbed, carinated, a furrow upon each side of the keel; inner whorls exposed, many; ribs many, strong, each terminating in a tubercle; aperture nearly square.

THE sides of this Ammonite are very slightly concave, the front is flat with a sunk keel; the ribs rising in knobs just as they reach the front, give the whorls a very square aspect; the ribs and the hollows between them, are nearly equal; the aperture occupies only one sixth of the diameter of the shell, and is very little longer than wide.

From the Lyas, near Yeovil; the specimen is very rugged, about seven inches in diameter; the figure is diminished.

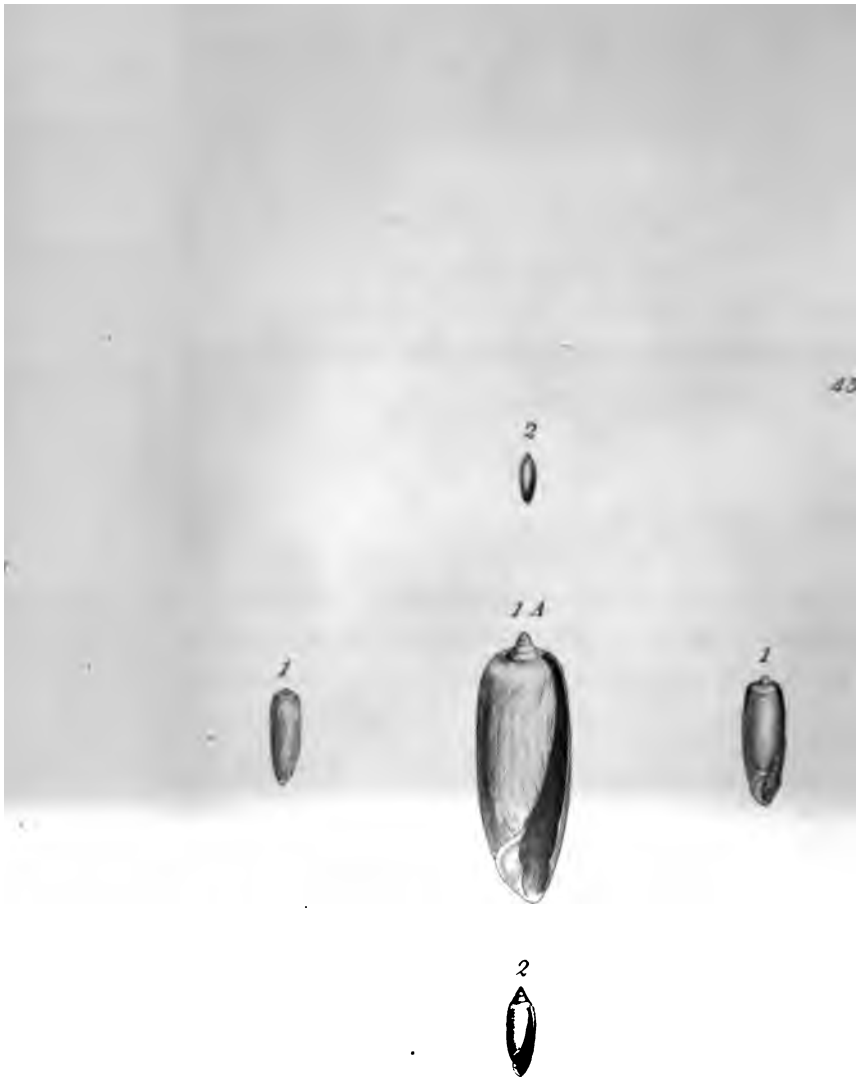
AMMONITES multicostata.

TAB. CCCCLIV.

SPEC. CHAR. Depressed, costated, carinated, a furrow on each side of the keel; inner whorls exposed, few; ribs strong, sharp, numerous, with a tubercle near the end of each; aperture oblong.

MUCH resembling the last, but not so flat; the ribs differ in form; they are more extended over the front and bent forwards from the depressed tubercle nearly to the furrow; the length of the aperture is more than one fourth of the diameter of the last whorl; the sides are not so remarkably flat, as in the A. rotiformis.

The figure is diminished from an individual 14 inches in diameter, and between 3 and 4 inches thick, found in Lyas near Bath.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ACTEON cuspidatus.

TAB. CCCCLV.—*fig.* 1.

SPEC. CHAR. Subcylindrical, smooth; spire immersed, cuspidated; one plait upon the columella.

THIS shell is nearly cylindrical, but it is a little contracted towards the base; the upper end is truncated with a small portion of the acute spire in its centre; the aperture extends the whole length of the shell, except this small part of the spire; the columnella has a sharp spiral edge, and one distinct plait above it. The aperture spreads a little, but is not notched at the base.

So novel is the contour of this little shell, that it is with difficulty compared to any before known; it agrees, however, with the essential characters of Acteon, but differs in general form, and in having a plain surface; it comes nearer in shape to Volvaria, but that has a truncated or notched base, and crenated lip to the aperture, besides several plaits upon the columella. It has been proposed to form a new Genus of it, to be called Cylindrites, but the following species having a conical spire, connects it with Acteon Noæ, (tab. 374.)

Figured from the Rev. George Cookson's Collection of Fossils found at Ancliffe. Fig. 1. A. is magnified.

ACTEON Acutus.

TAB. CCCCLV.—*fig.* 2.

SPEC. CHAR. Subcylindrical, smooth; spire conical, acute; one plait upon the columella.

GENERALLY smaller, and not so perfectly cylindrical as the preceding, because the spire is not so much concealed, and because it is more tapered towards the base; the aperture occupies about three fourths of the whole length.

Small specimens of this do not at first sight appear much related to the A. cuspidatus, they are so much more pointed at both ends, but an examination of the columella, and form of the aperture, soon point out their connection. They occur together at Ancliffe.

TELLINA inæqualis.

TAB. CCCCLVI.—*fig.* 2.

SPEC. CHAR. Oval, convex, smooth; anterior extremity obtuse, its surface finely striated from the beak; posterior side largest, rounded.

A SMOOTH, obtuse, unequal sided shell, whose width is to its length as 3 to 2: the lateral curve is very gentle, and the elevation upon the anterior side, which distinguishes it from the central portion, is slight. The striæ are sometimes very obscure.

Found in the Green Sand of Blackdown.

ORTHOCERA paradoxica.

TAB. CCCCLVII.

SPEC. CHAR. Lanceolate, curved, three angled, with a flat front, and convex sides; aperture an equilateral triangle; siphuncle nearly central.

ALTHOUGH this shell is called an Orthocera, it is in many particulars very different from any other known species, and approaches to a Nautilus by its curvature; but there is no impression, or any other mark about its inner edge, of a preceding whorl; the edges of the nearly flat front project a little, so that it appears concave; the other sides are convex but not similar, the greatest curvature being near the inner edge upon one of them, and in the middle upon the other: if we can depend upon the indications of the specimen, the aperture has a deep sinus in the edge of each of its sides, and the front.

It would perhaps have been proper to constitute a new genus of this very remarkable fossil, to be placed between Nautilus and Orthocera, but experience has shewn us how dangerous it is to form genera from such characters as fossils possess, especially when fragments only are preserved, and we have not the whole tribe before us. We know of only a short portion of the shell before us; one end of it is but half as wide as the other, and the curvature not more than the sixth part of a circle; therefore if it be an involute shell, the inner whorls must be very slender, or the outer one must have receded from them with a much less degree of curvature than they

possess. The Genus Spirula is perhaps the nearest approach among recent shells to such a form as this fossil might possibly have had when perfect: in the present state of our knowledge of its form, however, it would seem to be a rather bold assertion to declare them of the same Genus.

The specimen is a cast in Mountain Limestone filled with Calcareous Spar, found in Ireland, and presented in 1819 by Dr. Ogilby, and is augmented in value by his disinterested kindness.

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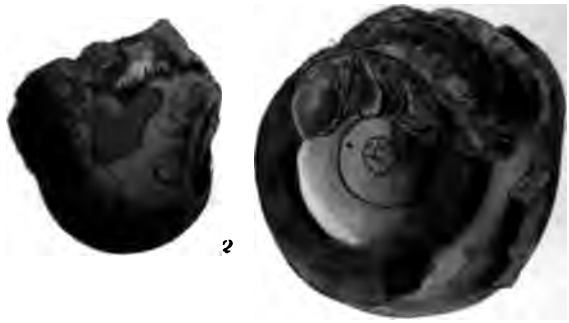


2

NAUTILUS expansus.

TAB. CCCCLVIII.—*fig.* 1.

SPEC. CHAR. Subglobose, umbilicated, finely striated; umbilicus small; sides of the aperture expanded.

SMALL Nautilus with sharp curved striæ following the s of growth; the aperture is so much expanded rally with the columella, as to make the axis con- rably longer than the diameter; the umbilicus is ll and nearly cylindrical: the septa cross the striæ, l are nearly straight edged at the front.

Found at Hamsey, by G. A. Mantell, Esq. whose iduity in collecting and describing, and liberality in plying specimens has added much to our knowledge the Chalk and Chalk-marl fossils. This shell bears ne resemblance to the young of Am. elegans, tab. 116, t I think can hardly have been mistaken for it. The ecimen in our Museum, is a cast in Chalk-marl.

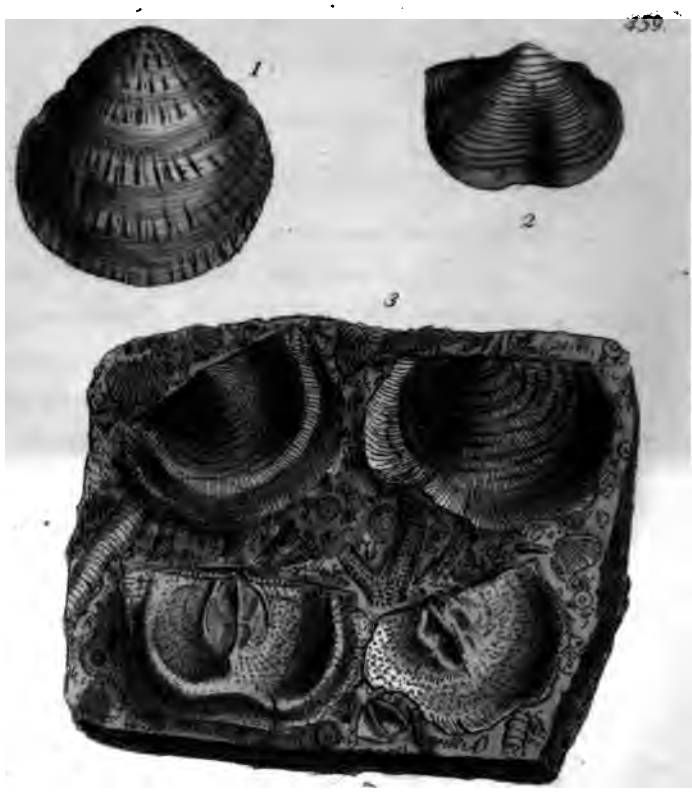
NAUTILUS biangulatus.

TAB. CCCCLVIII.—*fig.* 2.

Spec. Char. Discoid, subglobose, with a large umbilicus, and a keel upon each side.

The inner whorls of this Nautilus are half exposed, for each following whorl covers the preceding one as far as the keel upon its side, the front is rounded; the aperture is transversely elliptical, with the extremities angular in young, but obtuse, in old shells; its width equals two thirds of the diameter of the last whorl.

Occurs in the Mountain Limestone near Bristol; the specimens are in the Collection of the Rev. Dr. Beeke, Dean of Bristol.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PRODUCTA fimbriata.

TAB. CCCCLIX.—*fig* 1.

SPEC. CHAR. Hemispherical, with 6 or 8 transverse, crenated, spinous? furrows; beak rather produced.

SOMEWHAT resembling Producta punctata t. 323, but the furrows are more distant, and are crossed by ridges that seem to have been the bases of spines, arranged in the form of a fringe; the length is greater than the width, and about double the depth; the lesser valve is concave, with sharper and more numerous, but otherways similar markings, to the larger.

The specimen lined with Calcareous-spar, from the Limestone of Derbyshire, is preserved in the Collection of Charles Stokes, Esq.

PRODUCTA plicatilis.

TAB. CCCCLIX.—*fig*. 2.

SPEC. CHAR. Transversely oblong, convex above, depressed in the middle, longitudinally striated and transversely wrinkled, spinose; front smooth.

THE transverse rugæ are numerous and equal, they only appear upon the upper part of each valve; the descending front is even and smooth; the spines are few, scattered over the surface; the hinge line occupies the whole width of the shell.

A very neat well defined species rarely found in the Limestone of Derbyshire. We are equally obliged to Mr. Stokes for the opportunity of figuring this, as the preceding specimen.

PRODUCTA depressa.

TAB. CCCCLIX.—*fig.* 3.

SPEC. CHAR. Nearly semicircular, depressed, corrugated, longitudinally striated; upper portion convex near the beak, concave near the margin; front abruptly descending.

SYN. Producta depressa, *Sowerby's Genera.*

THE numerous striæ and concave space around the margin of the upper part, are the distinguishing characters of this species; the front although it descends suddenly, is not very deep; the hinge line is long, and the sides so expanded near it as almost to form ears; it has no spines.

The four views before us of this Producta, will serve to illustrate the Genus further than any previously given in this work; those of the inside shew the muscular impressions, with the processes near the hinge in the upper valve, and the crenulated hinge line in the other, which has also two elevations bounding the cicatrices of the muscles; they are all taken from two masses of Dudley Limestone, but are grouped together so as to occupy less space, and the essential parts made rather conspicuous.

I know of no other species in the Dudley Limestone, neither is this found in any other place.

ACTEON elongatus.

TAB. CCCCLX.—*fig.* 3.

SPEC. CHAR. Elongated, obtuse, transversely striated; the last whorl nearly cylindrical, aperture short, narrow above; lip expanded.

ABOUT the size and shape of a common oat, but more obtuse; it has about five whorls, the last of which is very large; the striæ are difficultly seen upon the spire and upper part of the last whorl; the columella has no plait.

Found at Barton, and presented by the Rev. T. Cooke.

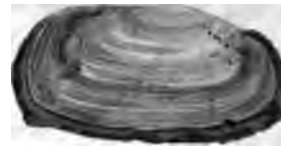
The three middle figures upon this plate, are all magnified representations.

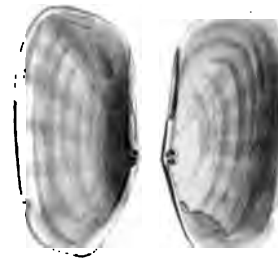
SPIRIFER cuspidatus, var.

TAB. CCCCLXI.—*fig.* 1.

This is only a dwarf variety of S. cuspidatus of tab. 120, with a shorter beak to the larger valve, and sharper sulci upon the sides: it has by some been thought distinct, I therefore have deemed it worth a figure.

Found near Bristol; it enriches the Cabinet of the Rev. Dr. Beeke.





SANGUINOLARIA compressa.

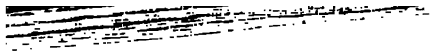
TAB. CCCCLXII.

SPEC. CHAR. Compressed, twice as wide as long, rather smooth; anterior side largest with a rounded truncation; two obscure elevated rays proceed from each beak.

A TRANSVERSELY oblong, flattish shell, whose anterior half is nearly square, and the other rounded, with an angle upon the upper part of its margin distant from the beaks; the rays are convex externally; there are two simple teeth in each valve placed nearly close together, and diverging a little; the shell is thin.

This shell may serve to connect the genera Solen, Sanguinolaria and Psammobia together: it belongs strictly to Azor of Leach, a genus that may probably be generally adopted at some not very distant period.

Found in Barton Cliff, accompanied by Murex Baronensis, presented by Miss Beminster.



NERITA spirata.

TAB. CCCCLXIII.—*fig.* 1 *and* 2.

EC. CHAR. Semiglobose, smooth; spire small, partly immersed; upper parts of the whorls flat, when old, concave; aperture transversely oval.

SMOOTH ventricose Nerite, rapidly expanding towards aperture; the lines of growth are sometimes rather spicuous upon the flat parts of the whorls, in other ts they are very slight: I have not seen the coella.

)ccurs in the mountain Limestone. Fig. 1, is from a cimen presented by the Rev. Robert Plumtree; it found in Gloucestershire, and fig. 2, a small individl, from Derbyshire: it has also been found near stol, the Dean of Bristol having obtained a specin in that neighbour-hood.

NERITA minuta.

TAB. CCCCLXIII.—*fig.* 3 *and* 4.

EC. CHAR. Hemispherical, smooth; spire indistinct; aperture oval; columellar lip not toothed.

ERY small and smooth; length not one line; the entire ge of the columella makes it a doubtful Nerite.

Produced by the Oolite of Ancliff, along with the next.

gured from the Cabinet of the Rev. George Cookson; 3 is magnified.

NERITA costata.

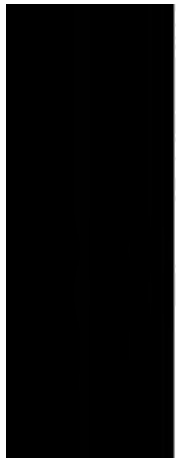
TAB. CCCCLXIII.—*figs. 5 and 6.*

SPEC. CHAR. Hemispherical; spire conspicuous, impressed; whorls transversely costated; costæ thin, sharp, numerous; aperture expanded, orbicular; columellar lip prominent, obtuse.

RATHER shorter, but otherways resembling the many ridged harp in miniature; its whorls are separated by an imperfect canal; the left lip is produced, and almost divided by an obscure sinus into two blunt teeth.

Presented by the Rev. G. Cookson; it is one of the most elegant productions of the Ancliff Oolite.

Figures 6 are two enlarged views.



BULLA Linn. &c.

N. CHAR. An ovato-globose, convoluted univalved shell; columella none; spire not produced; aperture as long as as the shell; its external margin sharp.

general form the shells of this Genus vary from cy-rical to obovate; they are usually thin, sometimes ost membranaceous, and fragile; the want of a colu-la, and the thin edge of the aperture distinguish the cies of this Genus as it is now defined by Lamarck, n several that were associated with them by Linneus, h as the Ovulæ, &c. and also from the Volvariæ. In e species there is a thickening of the inner lip of the rture that much resembles a columella, but this is er plaited; and such as have it may perhaps hereafter n a distinct Genus.

he animal to which the shell is attached, is remark-e for having no antennæ, and for the foot being rally expanded so as to be used in the way of fins to m with; the mantle does not include the shell.

BULLA convoluta.

TAB. CCCCLXIV.—*fig.* 1.

EC. CHAR. Very cylindrical, smooth; aperture linear, expanded a little way from the base; vertex obtuse, perforated.

N. Bulla convoluta *Brocchi, p.* 277. *tab.* 1. *fig.* 7.

NGTH two and a half times the width; the superior remity is broad, or rather the upper part of the whorls as it were truncated, the spire being sunk deeply into centre.

ound in Crag, by the Rev. G. R. Leathes. It does appear to be so strictly cylindrical as required by the cription given by Brocchi, but agrees well with his ure.

BULLA constricta.

TAB. CCCCLXIV.—*fig* 2.

SPEC. CHAR. Subcylindrical, contracted in the middle; vertex truncated, perforated; base obscurely striated; aperture linear, expanded at the base.

THREE times as long as wide; the superior flattened part of the whorl is not so broad as in the last, the aperture is also more linear, except near the base, where it is very wide.

Sent from Barton, by the Rev. Mr. Bingley.

BULLA elliptica.

TAB. CCCCLXIV.—*fig*. 6.

SPEC. CHAR. Elliptical, elongated, transversely striated; vertex perforated; aperture widest at the base.

THE form of this Bulla is a very regular ellipsis, the two extremities being equally rounded; the length is two and a half times the breadth; the striæ are very fine, rather most distant near the base.

Not unfrequent at Barton, varying from one to three lines in length.

BULLA attenuata.

TAB. CCCCLXIV.—*fig.* 3.

SC. CHAR. Elliptical, transversely striated; superior portion elongated, truncated, perforated; aperture curved, widest towards the base; striæ distant in the middle.

...UT twice as long as wide; the striæ upon the upper ...ated portion are close and deep; those on the ...le of the whorl, slight and distant; upon the base ...y are numerous, but not very strong.

...gured from a specimen from Hordwell, in the Col...tion of Miss Bennet; a small specimen has also been ...t by Miss Beminster.

BULLA *filosa*.

TAB. CCCCLXIV.—*fig.* 4.

This is a mutilated specimen of a large Bulla, that very finely striated; we propose to name it **BULLA ...OSA**, and regret much that we have never met with a ...cimen, from which a Specific Character can be drawn ...: its numerous striæ and expanded lip, distinguish it ...m B. attenuata.

BULLA acuminata.

TAB. CCCCLXIV.—*fig.* 5.

Spec. Char. Cylindrical, transversely striated; vertex acuminated; aperture linear.

Three and a half times as long as wide; at first sight much resembling the Volvariæ, but the base of the aperture is more expanded, and it has no plaits: the striæ are not dotted, they are obscure near the middle of the whorl; the superior edge of the aperture is produced to a point.

Sent from Hordwell or Barton by Miss Beminster.

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AURICULA ventricosa.

TAB. CCCCLXV.—*fig.* 1.

EC. CHAR. Subovate, inflated, transversely striated; spire short pointed, base notched; three sharp plaits upon the columella; left lip callous, a thick border upon the right lip.

HIS is the largest of several species of shells, resem- ng Auricula ringens of Lamarck, all of which are sil; it is distinguished from A. ringens by its smooth ter lip, and from A. turgida, M. C. t. 163, by its callus on the inner lip, and a third plait; the length does t exceed the breadth.

Forwarded from the Crag near Ipswich, by our kind rrespondent Mrs. Cobbold; it appears to be a very e shell, the Rev. G. R. Leathes having found only e individual; there is a species found at Bordeaux, embling this in every thing but size; it is but little ger than the *ringens*.

AURICULA buccinea.

TAB. CCCCLXV.—*fig.* 2.

Spec. Char. Subovate, inflated, smooth; spire short, acute; base notched; three sharp plaits upon the columella; left lip callous; right lip with a thick border.

Syn. Voluta buccinea, *Brocchi*, 319. *t.* 4. *f.* 9.

Distinguished from A. turgida, M. C. 163, and other similar shells by the regularity of its form, smooth surface, short spire, and plain outer lip. The upper plait in the aperture is partly concealed by the callus upon the left lip, and the lower is the spiral edge of the columella; the length and breadth are in the proportion of 3 to 2, nearly.

Collected in the Crag, at Ramsholt, by the Rev. G. R. Leathes.

The shells upon this plate with their analagous species, agree so exactly with Lamarck's Auricula ringens, that they must be included in the same Genus; but the notch at the base of the aperture perfectly distinguishes them from that under which Lamarck has placed them. Brocchi has referred his Voluta buccinea, with two other very different shells to Marginella, but without sufficient reason. They have strong claims to be united under the Genus Nassa, and are somewhat related to Columbella; whether it will be necessary upon a revision of the fossils in this work, to create a new Generic division for their reception, is at present a question. They are in all probability marine reliquia.

Saxicava. *Lamarck.*

EN. CHAR. A transverse, inequilateral, bivalved shell; anterior extremity gaping; hinge with an external ligament, and only rudiments of teeth.

ER shells of this Genus inhabit holes in stone, not of ir own making, to the size of which they are iged to conform, consequently they are often much torted and rugged: the muscular impressions are ong, and the attachment of the mantle is marked by a r of irregular cicatrices, of which the central one is ger than the others; the tubes of the animal are long l projecting.

SAXICAVA rugosa.

TAB. CCCCLXVI.

EC. CHAR. Ovate, gibbose, rugged, both extremities blunt, upon the disk of the anterior side are sometimes two rows of irregular short spines.

N. Mytilus rugosus, *Linn. Pennant, &c.* Biapholius rugosus, *Leach, MSS.* Saxicava rugosa, *Lamarck Hist. Nat. V.* 501.

r. spinosa, Solen minutus, *Linn. &c. Lam. Hist. Nat. V.* 453. Biapholius spinosus, *Leach MSS.*

OWEVER rugged the individuals of this common species y be, there is generally an angular ridge that marks anterior side*; between this and the upper edge are ietimes two rows of concave, irregular spines; at

That is, the side from which the tubes are protruded; we are aware some Authors consider this posterior, but we think it best not to ige the term in this part of the work.

other times only two very obscure ribs, and often no indication of either: the young state of the spinous variety has been referred to the Genus Solen, and it is very remarkable that Lamarck should not have discovered its relation to Saxicava rugosa.

The specimens before us are from the Suffolk Crag, they were collected by the Rev. G. R. Leaths, and have all the visible characters of genuine Crag Fossils, but they agree in form with the recent species, and Mrs. Cobbold has sent us a small specimen which she found amongst others in holes in Septuria, immediately below the Crag at Holywells, which would lead us to suspect them to be of comparatively modern extraction. The middle figures have some remains of the spines belonging to the variety.

by lines of growth: it is twice as long as wide, and not remarkably deep. The ligament is seated in a deep and wide groove.

Only two specimens of this curious shell, which forms an osculent Genus, have fallen under our notice; the one a young individual presented by G. W. Braikenridge, Esq. the other apparently full grown, purchased by Mr. G. B. Sowerby; they are both from Dundry, near Bristol, and were imbedded in the Ironshot Oolite.

OSTREA solitaria.

TAB. CCCCLXVIII.—*fig.* 1.

SPEC. CHAR. Obovate, plaited; one valve flatish; plaits deep, sharp, rugged and branched; beaks short.

A FLATTER, broader, and less curved shell than O. gregarea, (tab. 111.) it has also fewer plaits, and is not so commonly found in groups: it is sometimes curved, as one of the figures shews, but in that case it becomes broader rather than longer.

We are indebted for the use of the specimens figured to Miss Benett, who obtained them of a Dealer at Weymouth, near which place they were picked up.

OSTREA macroptera.

TAB. CCCCLXVIII.—*figs.* 2 *and* 3.

SPEC. CHAR. Falciform depressed, with a large rectangular ear or wing within the curve; plaited; margin deeply toothed; one valve attached by a great part of its surface.

THE large wing-like lobe within the curved side of this Oyster, gives it a very striking appearance. The valves are nearly flat except towards the margin, where they are very deeply plaited, and the edges of course largely

and sharply toothed; the hinge pit (or fulcrum) is broad and curved. The attached valve extends in branching processes upon the surface it is upon.

In the description of Gryphæa sinuata mention is made of this "bilobed" Oyster, adhering to a specimen of that shell from Folkstone; there are three attached valves upon that specimen, one of which is represented at fig. 2. of the plate before us.

Fig. 3. shews the other valve, probably from the same locality.

We regret that the Oyster from the Isle of Wight, mentioned in the same place, is not perfect enough to determine whether it be the same species; some differences are observable, and we have not been so fortunate as to meet with another specimen.

BELLEROPHON Montfort.

GEN. CHAR. An involute, univalved shell; nearly sphærical; the last whorl enclosing the others; aperture arched, terminated by the extremities of the transverse columella, (or axis), and furnished with a sinus in the centre of its outer edge.

IN general form the shells of this genus resemble the Nautili, but they have no septa; the two sides, if they may be so called that are indicated by the extremities of the axis, are nearly similar, in which particular they are distinguished from Ovula, Bulla, and most other involute Genera; they are sometimes umbilicated; the front edge of the aperture has a sinus in it, from which, in most species a band runs round the whorl, and forms a kind of keel; as this keel is very variable in size, the presence of it is not considered as essential to the Genus, but will serve to divide it into two sections by; the *first* without; the *second*, with a central band.

Had not M. Defrance ascertained from a specimen formerly belonging to De Montfort, that his Bellerophon was not a chambered shell,* the Genus would probably have long remained without being recognized, although several species are far from being of rare occurrence in the older Limestone rocks; it is not unlikely that De Montfort was misled in his generic character, by imperfect specimens of Nautilus biangulatus,† t. 458. f. 2, which he might consider as portions of the same species, as it occurs in the same limestone.

Ellipsolites ovatus, t. 37, belongs to this Genus.

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* Annales des Sciences Naturelles Vol. I. p. 264.
Zoological Journal, No. 2. p. 223.

† I have just received specimens of this from Ireland, several inches in diameter, and also learnt that it was a mistake to give Bristol as the locality of the specimen figured, it also came from Ireland.

The following species probably belong to the 1st Section.

BELLEROPHON apertus.

TAB. CCCCLXIX.—*fig.* 1.

SPEC. CHAR. Nearly sphærical, without a band? inner whorls concealed, axis solid; sides of the aperture expanded.

THE sinus in the front of the aperture, and the expanded sides are conspicuous in full grown individuals of this species, which are from two to four inches in diameter; as we have but little more than casts of the inside, the cast of the shell itself continuing no farther than two or three of the innermost whorls, we are not positive of the nonexistence of a band; the surface seems to be smooth, and the shell is very thick, so that the cast appears to be umbilicated, and shews the inner whorls: the front is rather prominent, and forms a kind of depressed and dilated keel around the whorl; the extremities of the aperture are rather square.

The specimens just described were found in Limestone at Carlingford, in the County of Louth, and presented by Samuel Wright, Esq. of Cork: they consist of compact Limestone, with many minute crystals of Carbonate of Lime, and a few of Sulphate of Barytes scattered over them. We have seen a large one from Settle in Yorkshire.

We have specimens of an analogous shell from Kendal, another from Ireland, and a third from Bristol, all of which seem to be really umbilicated; that from Ireland, has the cast of the outer surface of the shell, and is quite smooth: we wish to see more specimens of these before figureing them.

BELLEROPHON Cornu-Arietis.

TAB. CCCCLXIX.—*fig.* 2.

SPEC. CHAR. Rather compressed; whorls few, rapidly enlarging, carinated near the aperture; aperture expanded; shell very thick; sinus large and angular.

THE expanded lip of the aperture of this species is divided by the sinus into two rounded lobes; we know not whether the shell is umbilicated or not, as we possess only casts of the inside; the shell appears to be 3-8ths of an inch thick in some parts; the inner whorls are very small.

Found in a brownish limestone, near Kendal, in Westmoreland; the space formerly occupied by the shell, is partly filled with white calcareous Spar.

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SECTION 2nd, with a central band.

To this section the species mentioned by Montfort belong.

BELLEROPHON HIULCUS.

TAB. CCCCLXX.—*fig* 1.

SPEC. CHAR. Globose, expanded, closely striated; central band flat, broad, defined; axis perforated.

SYN. Conchyliolithus Nautilites hiulcus, *Martin Pet. Derb.* tab. 40. f. 1. and perhaps fig. 2. *Syst. Arrangement to tab.* 1 *of ditto, p.* 15. *var. a? b.*

COSE, sharp, elevated striæ that pass obliquely from the central flat band to the axis, distinguish this species, which is moreover wider than any other; the sinus in front is deep, and leaves arched striæ upon the band, as it is filled by the growth of the shell; the sides of the band are defined by sharp depressed lines; it is nearly the eighth of an inch wide.

Our specimen is from Derbyshire, but without examining both of Martin's specimens, we are not certain that they are one species; his fig. 2, or variety a, approaches to our fig. 4.

BELLEROPHON tenuifascia.

TAB. CCCCLXX.—*figs.* 2 *and* 3.

SPEC. CHAR. Sphærical, umbilicated, finely striated; band linear, elevated.

SYN. Conch. Naut. hiulcus, var. c. *Martin Pet. Derb. Syst. Arrang. p.* 15.

A MORE sphærical shell than the last, with much finer and more numerous striæ; it has also a larger umbilicus, and a very narrow elevated thread like band.

Found in Derbyshire (fig. 3.) at Scaleber, near Settle in Yorkshire, (fig. 2.) and near Kendal, sometimes three inches in diameter. It is evidently the third variety of C. N. hiulcus of Martin, which he has not figured.

BELLEROPHON costatus.

TAB. CCCCLXX.—*fig.* 4.

SPEC. CHAR. Globose, expanded, subcarinated, with slender sharp ribs diverging from the undefined band; axis perforated.

SYN. *Parkinson Org. Rem. Vol. p.* 3, 141, *t.* 10, *f.* 6 *and* 7.

THE carinated form, sharp ribs and undefined but broad convex band, distinguish this; the aperture is wide and much arched, and the sinus in it deep, leaving bent striæ upon the band.

We have but one specimen of this, probably from Derbyshire. Parkinson seems to consider it the same as Martin's hiulcus, and it may possibly be his fig. 2, and var. a. but he describes the band as flat.

PECTUNCULUS variabilis.

TAB. CCCCLXXI.

SPEC. CHAR. Obliquely suborbicular, rather convex, finely striated longitudinally, becoming smooth or sulcated by wear; teeth of the hinge and lines upon the area of the ligament, numerous; beaks short nearly, close.

SYN. P. pulvinatus var. Taurinensis. *Mem. sur. les Terrains de Sédiment sup. du Vicentin, par Brongniart. p.* 77, *t.* 6. *f.* 16.

This Pectunculus varies perhaps more frequently than any other species in the proportion of its length to its breadth, and in its obliquity; sometimes it is even longer than wide, but it is always longer and more oblique than P. pilosus, and has a more regularly curved edge. It is nearly like P. pulvinatus, but is never so convex, and is distinguished at first sight; neither will it agree with the description of P. Cor. given by Lamarck. The hinge teeth are generally numerous, but are liable to be obliterated by the area of the ligament, so that in old shells but a few remain on each side: the beaks are not oblique. When young and not worn, it is covered with very fine longitudinal striæ, these soon wear away, and leave the surface smooth; by decay the internal ribbed structure, common to shells that have teeth in their margins, is displayed, with a strong resemblance to longitudinal sulci.

Not having been able to refer this well known English Crag shell to any of Lamarck's or Brocchi's species, I have been obliged to give it a new name. It may possibly have been considered by Lamarck as a variety of his P. Cor but this wants proof. His P. obovatus I believe occurs in the Suffolk Crag, but specimens alone can decide.

Very common from half an inch to three inches or more long, in many of the Crag pits of Norfolk, Suffolk, and Essex; Parkinson refers it to the recent P. Glycimeris.

PECTUNCULUS brevirostris.

TAB. CCCCLXXII.—*fig.* 1.

SPEC. CHAR. Transversely obovate, rather oblique, and inequilateral, convex, obscurely costated, concentrically striated; hinge line rather straight; beaks short, not oblique; hinge teeth few.

THERE is a slight elevation of the surface along the anterior side from the beak to the edge, where it produces a gentle projection, and a little below this is the greatest length of the shell; the costæ are convex, but so little elevated as to be hardly discoverable in some parts: some specimens have elevated lines between them, but possibly they are the effect of wear; the teeth of the hinge are few, and very oblique; below the area of the ligament, it is more inequilateral, less convex, and not so square as P. pulvinatus of Lamarck.

An abundant and well known shell in the Bognor Rocks; I have never observed any variation of consequence in its form; it wants the heartshaped space described by Brocchi in his Arca insubrica, and has shorter beaks.

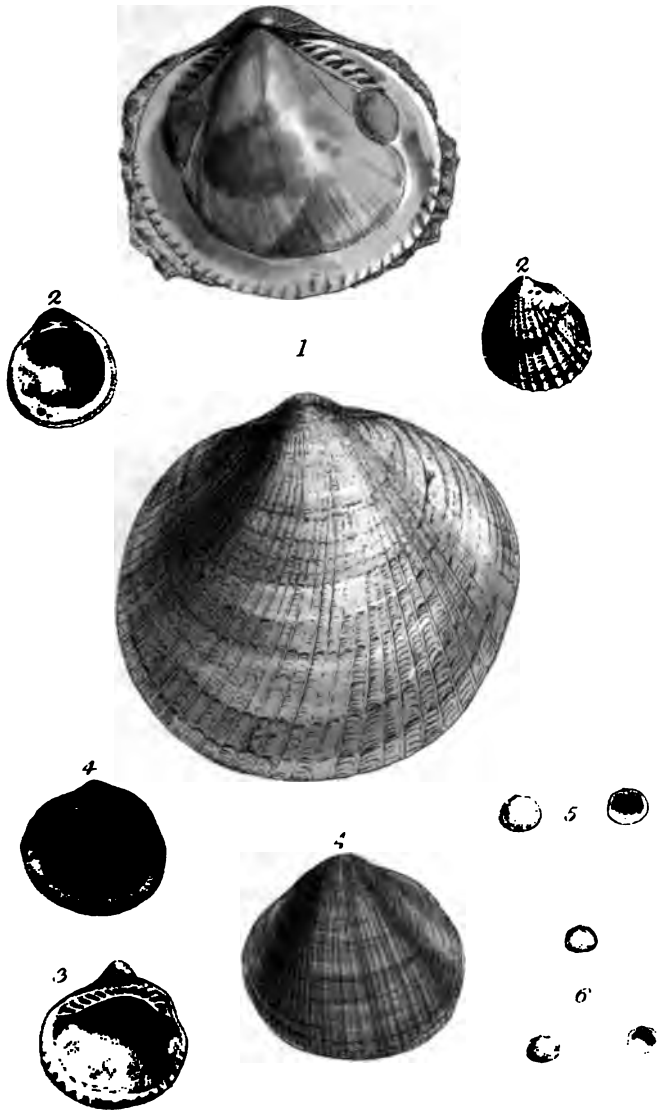
PECTUNCULUS sublævis.

TAB. CCCCLXXII.—*fig.* 4.

SPEC. CHAR. Transversely obovate, æquilateral, rather gibbose, with many slightly elevated ribs; beaks short, nearly close; sides smooth.

BOTH the sides of this shell are nearly destitute of ribs; there is a depressed space upon the anterior, which bounds a convex surface near that extremity of the hinge; the large hinge teeth occupy a regular arch below the area for the ligament, which area is small; the teeth upon the edge of the shell, are small and regular.

Found in loose yellow sand at Blackdown, where the substance of the shell is replaced by Silex.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PECTUNCULUS umbonatus,

TAB. CCCCLXXII.—*fig.* 3.

And TAB. CLVI.—*figs.* 2, 3 *and* 4.

SPEC. CHAR. Orbicular, gibbose, nearly æquilateral, longitudinally striated and obscurely costated; beaks prominent, obliquely curved, a lobe on the anterior side.

THIS is the same shell given as a Cardium at page 128 of Vol. II. because the hinge had not then been seen. It is distinguished from P. sublævis just described, by the prominent beaks, and smaller number of its ribs; the teeth are large in proportion to the shell, from which circumstance it should seem to be the Pectunculus mentioned as found in the Whetstone-pits by Parkinson, Vol. III. p. 169. I am indebted to Mr. Goodhall for specimens shewing the hinge. It occurs both at Halldown and Blackdown.

PECTUNCULUS scalaris,

TAB. CCCCLXXII.—*fig.* 2.

SPEC. CHAR. Obovate, convex, longitudinally ribbed, ribs narrow, sharp; area of the ligament short, projecting at the extremities, with a triangular pit in its centre; margin irregularly toothed.

EXTERNALLY this is marked exactly in the same way as P. costatus,* (tab. 27, fig. 2,) the transverse lines between the ribs resembling the steps of a rope ladder. The length exceeding considerably the breadth, the granulated rather than toothed margin, and the triangular pit in the hinge, are strong marks of distinction that cannot easily be overlooked; the teeth of the hinge are long and sharp, like those of Nucula, to which genus the hinge altogether bears a strong resemblance: the hinge of Arca aurita of Brocchi is similar.

Sent by Miss Beminster from Hordwell; it has often been confounded with Brander's Arca deleta.

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* This is Arca deleta of Brander, consequently it should have been called Pectunculus deletus.

PECTUNCULUS minimus.

TAB. CCCCLXII.—*fig.* 5.

SPEC. CHAR. Orbicular, convex, smooth; hinge-line straight, prominent at the extremities; margin not toothed.

VERY nearly æquilateral, and almost as long as wide; the hinge teeth are but 4 or 5 on each side; the want of teeth within the margin is connected with the plain surface.

Found at Ancliff by the Rev. Mr. Cookson. It seldom exceeds a quarter of an inch in length.

PECTUNCULUS oblongus.

TAB. CCCCLXXI.—*fig.* 6.

SPEC. CHAR. Transversely oblong, inequilateral, rather convex, smooth; sides obliquely truncated; margin not toothed.

IN one or two remarkable characters this resembles the last, but it is less convex, and much broader; its size is nearly the same.

Sent from Ancliff with the last.

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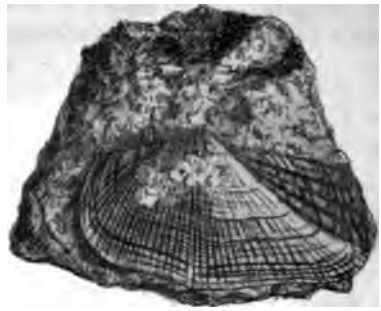

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ARCA quadrisulcata.

TAB. CCCCLXXIII.—*fig.* 1.

EC. CHAR. Twice as wide as long, convex, longitudinally striated; anterior side truncated, defined by a keel, and marked by four deep furrows; posterior side small, rounded; marginal sinus large.

IE sinus in the margin of this fossil shows it to be an ca, although it is otherways so badly preserved that teeth cannot be discovered, and it might be taken a Cucullæa: the four ribs between the furrows on the terior side are a good character to distinguish the spes by; the longitudinal striæ are crossed by the lines growth, and give the surface a rugged appearance. Found in the Pisolite of Malton.

ARCA cancellata.

TAB. CCCCLXXIII.—*fig.* 2.

EC. CHAR. Twice as wide as long, convex, longitudinally and transversely sulcated; anterior side defined by a keel, truncated; posterior side rounded; marginal sinus short but deep; beaks nearly close.

N. Conch. Arcites cancellatus. *Martin Pet. Derb. pl. 44. fig. 7.*

IE front and back are parallel; the anterior side has ny sulci of an equal depth with those upon the rest of surface: in other respects it much resembles the last. From the Derbyshire Limestone, apparently the same cimen that was figured by Mr. Martin.

ARCA pulchra.

TAB. CCCCLXXIII.—*fig.* 3.

EC. CHAR. Transversely ovate-elongated, depressed, finely striated, anterior side rather impressed, obliquely truncated; beaks close.

ARLY twice as wide as long; the striæ are very form and close together; the valves are rather flat in middle.

Drawn from the Rev. Mr. Cookson's collection of cliff fossils. Although there is hardly any appearance a sinus in the margin, this is placed as an Arca beise it has no transverse elongated teeth in the hinge, se nearest the extremities being longitudinal: it is vever one of the links that unite the two Genera.

ARCA duplicata.

TAB. CCCCLXXIV.—*fig.* 1.

SPEC. CHAR. Transversely ovate-elongated, convex, longitudinally ribbed; ribs sulcated along the middle; margin toothed; beaks close.

REMARKABLE for having doubled or forked ribs; the surface is convex without any ridge distinguishing the anterior side; the sinus in the edge is obscure.

Sent from Hordwell by several friends.

ARCA depressa.

TAB. CCCCLXXIV.—*fig.* 2.

SPEC. CHAR. Elongated transversely, depressed, marked with elevated and crenulated striæ; extremities rounded; marginal sinus obscure.

THE rounded extremities, or rather sides, and distant elevated striæ decussated by the lines of growth, distinguish this Arca; the striæ are very distant upon the anterior side, and appear like small knotted threads.

Very much mutilated specimens of this shell were picked up in 1821, among the oysters in the clay above the sand, in the pits near Woolwich: it is unfortunate that none more perfect have come to hand, as I am not certain that its flattened form may not result from pressure entirely.

ARCA tumida.

TAB. CCCCLXXIV.—*fig.* 3.

SPEC. CHAR. Transversely elongated, gibbose, costated? anterior side pointed; marginal sinus short, deep; beaks distant.

ABOVE twice as wide as long; the depth of each valve nearly equals its length; the beaks are very near the posterior extremity; there is an obtuse ridge runs from the beak to the anterior angle. As the specimens are only casts of the inside, the surface cannot be described; but there are indications of rather distant furrows with ribs between them upon some individuals.

Occurs plentifully in the Magnesian Limestone of Tunstal Hill, near Sunderland.

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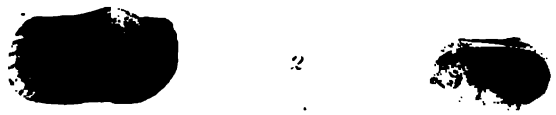

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NUCULA Palmæ.

TAB. CCCCLXXV.—*fig.* 1.

SPEC. CHAR. Transversely elongated, very convex, shining; extremities rounded, equal; beaks nearly central.

ALMOST cylindrical with rounded ends; the lines of growth are sharply but irregularly marked, otherways the surface is smooth, shining and regularly convex. The beaks are partly broken away, but a compensation is made for their loss by the exposure of the hinge teeth.

This is probably a very rare shell; it is from Mr. Martin's collection of Derbyshire fossils, although not figured by him.

NUCULA variabilis.

TAB. CCCCLXXV.—*fig.* 2.

SPEC. CHAR. Transversely oval, elongated, sometimes oblique, rather depressed, smooth; beaks near one end.

THE form of this shell is very variable; it is sometimes very oblique; but the beaks are constantly near the posterior extremity, which is generally rather less rounded than the other; the greatest depth of the valves is near the beaks; the lunette is neither impressed nor conspicuous.

An elegant and very distinct Nucula, although somewhat related to N. similis (M. C. 192), which is very different in form.

From the Ancliff collection. The small figures are of the natural size.

NUCULA impressa.

TAB. CCCCLXXV.—*fig.* 3.

SPEC. CHAR. Transversely oval, depressed, smooth; beaks near one extremity; lunette deeply sunk, convex, elongated; edges entire.

THE deep lunette, and margin regularly curved, except where the lunette makes it straight, sufficiently distinguish this species.

A silicized fossil from Blackdown.

NUCULA antiquata.

TAB. CCCCLXXV.—*fig.* 4.

SPEC. CHAR. Triangular, rounded, gibbose, antiquated, longitudinally striated; lunette heart-shaped, sunk; margin toothed.

A MORE gibbose shell than most of the analogous Nuculæ: it is rendered very uneven by its irregular mode of growth; the beaks are incurved and close together.

From Blackdown, cast in Silex.

NUCULA Ovum.

TAB. CCCCLXXVI.—*fig.* 1.

SPEC. CHAR. Transversely obovate, ventricose, smooth, anteriorly pointed.

ABOUT the size of a wren's egg; nearly as deep as long; the posterior extremity is regularly rounded, the other drawn out in a short point.

Presented by our kind friend the Right Hon. the

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rchioness of Bath, who obtained it from the Alum-rks of Lord Dundas, near Whitby. The stone in ich the shells are imbedded is very hard.

NUCULA claviformis.

TAB. CCCCLXXVI.—*fig.* 2.

EC. CHAR. Ventricose, concentrically sulcated; anterior side rounded; posterior much produced, attenuated; upon the posterior slope is a broad concave area, bounded by two ridges that run from the beaks to the anterior extremity; sulci fine.

JLL twice as wide as long; the attenuated extremity curved a little upwards and truncated; upon its upper rt is a broad space rather concave and bounded by o obtuse ridges.

The specimen figured is from Northamptonshire: it s also been met with in rounded masses of gray Lime-ne in the alluvial deposits so common in many parts Norfolk and Suffolk.

NUCULA Lacryma.

TAB. CCCCLXXVI.—*fig.* 3.

EC. CHAR. Ovate, gibbose, smooth; anterior side produced, pointed, convex above; posterior side rounded.

BOUT twice as wide as long, much resembling the last form, but not sulcated, and otherways distinguished the shape of the produced portion. The size and

form resembling a drop of water when it commences its fall has given rise to its name.

One of the minute productions of the Ancliff Limestone. Two of the figures are magnified.

NUCULA mucronata.

TAB. CCCCLXXVI.—*fig.* 4.

SPEC. CHAR. Subrhomboidal, rounded, convex, concentrically sulcated, anteriorly mucronated.

TWO-THIRDS as long as wide, very minute; the anterior side is drawn out in the form of a flattened spine, and is distinguished from the other portion of the shell by being suddenly flatter.

Found at Ancliff. The lower figures are enlarged.

NUCULA angulata.

TAB. CCCCLXXVI.—*fig.* 5.

SPEC. CHAR. Rhomboidal, concentrically striated; most convex near the beaks; front rounded.

BOTH sides of this shell are angular, and the lines from their extremities to the beaks are nearly straight and equal; it is about half as wide again as it is long; the striæ upon its surface are regular fine sulci, and not very conspicuous.

There are several similar species found in strata corresponding with the London Clay; but all that I have met with differ in form and the depth of their sulci.

An uncommon Blackdown fossil. Magnified figures are given below that of the natural size.

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BUCCINUM elegans.

TAB. CCCCLXXVII.—*fig.* 1.

SPEC. CHAR. Conical, acuminated; whorls ventricose, ornamented with nine or ten sharp elevated striæ that rise over numerous rounded costæ; aperture nearly round, toothed within.

A PRETTY sharp-pointed Buccinum; the costæ although small are so much elevated and so much larger than the lines that pass over them, that they do not lose their form or appear divided.

Named and presented by the Rev. G. R. Leathes, who found it in the Suffolk Crag.

BUCCINUM propinquum.

TAB. CCCCLXXVII.—*fig.* 2.

SPEC. CHAR. Ovate, pointed, longitudinally costated; costæ divided into tubercles by many transverse sulci, the uppermost of which is very broad; aperture obovate.

A SHELL very nearly resembling B. granulatum of M. C. tab. 110, but it is more ovate and commonly larger; the upper tubercle of each row is distant from the others, and so a kind of crown is formed upon each whorl; the lip does not appear to be toothed within.

We know of no recent species that exactly resembles this, although there are several that approach very near to it; one in particular might be thought the same, had

OVULA Leathesi.

TAB. CCCCLXXVIII.

SPEC. CHAR. Elliptical, elongated, rather ventricose in the middle, smooth; a large plait upon the columella.

NEARLY twice as long as wide, rather contracted towards the extremities, but hardly to be called beaked: the lip is smooth, very thick, and rather flattened; the body of the shell has a slight concavity opposed to the lower part of the lip, and near its upper extremity it has a thick curved plait. There is a slight indication of a ridge across the back, which may have been reduced by wear.

This Ovula appears to hold an intermediate place between O. passerinalis (a fossil species from the Plaicentine, *Lam. Hist. Nat.* vii. 371.) and the O. Spelta, approaching nearest to the former, which is however described as much more ventricose. The specimen figured is from the rich cabinet of Crag fossils in the possession of the Rev. G. R. Leathes, who obtained it at Walton: it is so rare that only a fragment besides has been found.

So well known are the researches of the liberal possessor of this curious shell, that no apology appears necessary for commemorating his name.

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NATICA sigaretina.

TAB. CCCCLXXIX.—*fig. 3.*

SPEC. CHAR. Much depressed; umbilicus large, filled with a lenticular callus.

SYN. Natica sigaretina. *De France*, MSS.

SPIRE small and indistinct, almost concealed by the last whorl; the aperture is ovate, curved and pointed above: an oval compressed callus fills the umbilicus; but as the shell increases the callus rises faster than it fills the hollow, so that a portion is generally open for a small depth.

From a mass of Sandy Marl belonging to the London Clay; but found among alluvium in Suffolk, by Dawson Turner, Esq. many years ago: the same species has been presented by Mons. De France, named as above, found near Bordeaux.

TAB. CCCCLXXIX.—*fig. 4.*

THIS Figure represents a magnificent specimen of Natica glaucinoides of M. C. tab. 5. It is from the Suffolk Crag, and belongs to the Rev. G. R. Leathes, to whose kindness we are much indebted.

The same species is often found smaller at Bramerton and in other parts of the Norfolk and Suffolk Crag, it is probably the Nerita helicina of Brocchi, 297, tab. 1, f. 10.

CLAVAGELLA Lamarck.

EN. CHAR. A bivalve whose valves are contained within a shelly vagina, with the surface of which one of them only is incorporated; vagina claviform, furnished with tubes about its larger end.

NTIL the recent species of this Genus was discovered *, re remained some room to doubt the fact of one of valves of the shell being united to the shelly tube, rant of symmetry that is very difficult to admit with- good evidence, and to which we know of nothing logous. The two Genera of the same family be- een which this would naturally arrange, are Asper- lum (commonly called the Watering-pot) and Gastro- ena, which probably includes all the Fistulanæ of marck that really have shelly tubes, and do not be- g to Teredo): the first of these has two equal valves, h so united to the tube as to form part of it, the latter both the valves loose and also equal; thus the cir- nstance of one valve being attached is very remark- e. The form of the valves in Clavagella and also Aspergillum is somewhat like those of Mya: the two nera, however, differ in the tube, that of Aspergillum ring besides a fringe of tubes a number of simple forations in a convex disk, which do not exist in vagella: in most of the species of Clavagella the all tubes are irregularly scattered over the larger end the principal tube or vagina, but in one they are in a le and regularly branched; this species consequently ds to Aspergillum. Most of the species require to attached to some solid body for their support, or are edded in porous stones: some, however, seem to be , and not one probably is capable of boring a hole itself, as all the Gastrochœnæ and the Fistulanæ do. We have shortened the Generic Character in conse- nce of its being too precise a description of one spe- , but trust it is still sufficient to exclude every other nus.

* See Sowerby's Genera of Shells, "Clavagella aperta."

CLAVAGELLA coronata.

TAB. CCCCLXXX.

SPEC. CHAR. Vagina elongated, crowned with dichotomously branched tubes, around a sulcated disk; free.

SYN. Clavagella coronata, *Deshayes, Coquilles Fossiles de Paris.* 8, *t.* 5. *fig.* 9 & 10.

TUBE or Vagina very gradually attenuated, at its larger extremity suddenly contracted, and then expanded into about eight regularly branched lesser tubes, arranged in two sets on the sides of a small disk that is divided in the middle by a furrow: the branches are at least thrice dichotomous; the sulcus that divides the two sets has a branch that descends the side of the vagina in which the free valve lies: the valves are oblong, widely gaping, with large pointed beaks, waved by lines of growth, and both pearly within, thus differing from the tube which is in no other part pearly.

Casts of this shell in a soft sand-stone, brought to England in ballast from the Tagus, were exhibited to the Linnean Society, by the late Mr. Sowerby, before the Genus to which Deshayes has referred it was known: they were accompanied by several other unknown shells, and by some known in the London Clay. Two views (*fig.* 2 and 3), one showing the beaks of both valves (*fig.* 3.), are added for illustration to this plate. The principal figure is taken from a specimen certainly English, but as the label is lost, I am unable to ascertain whether from Hordwell, Barton, or Muddiford: the branches were until lately much concealed by the clay, and the specimen not much valued.

Both this and the Tagus examples serve to show that the tube was not attached, (except possibly by the branches), for they are closely surrounded by other loose fossils: the shells about this are Corbula Pisum, Strombus Bartonensis (Murex M. C.), Volutæ, and many others common in the London Clay. There are no remains of wood about it, by which the tubes of Teredines are generally surrounded.

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NAUTILUS globatus.

TAB. CCCCLXXXI.

Spec. Char. Subglobose, smooth, umbilicated; whorls few, inner ones concealed, rather flattened on the front, rapidly increasing; umbilicus deep, with an angular margin; aperture very wide, arched, with a deep sinus in the front.

The thickness and diameter of this Nautilus are nearly equal, the sinus formed in the aperture by the preceding whorl is small, because the whorls increase rapidly in size; the lip is divided into two rounded lobes by a deep and wide sinus, the septa are rather numerous.

Many specimens of this fossil lately received from Cork, where it abounds in the Black-Rock, have proved it to be a Nautilus, and that it was a mistake to refer it to Bellerophon as I have done at p. 108, where a specimen is mentioned. It is sometimes six inches in diameter.

NAUTILUS multicarinatus.

TAB. CCCCLXXXII.—*fig.* 1 and 2.

Spec. Char. Discoid, subglobose; inner whorls half exposed in a large deep umbilicus; edge of the umbilicus angular; front compressed, with several carinæ on each side the middle.

The sides of the whorls of this Nautilus are very narrow and concave; the front, which is broad, has in its middle a concave band, on each side of which are four sharp ridges besides the one that bounds the side: it is probable that these ridges diminish in number as the shell advances, for the larger specimen (*fig.* 2.) has but two in place of four, and these even are lost near the aperture.

Found rarely in the Black-Rock at Cork.

NAUTILUS cariniferus.

TAB. CCCCLXXXII.—*fig.* 3 and 4.

SPEC. CHAR. Discoid, subglobose; inner whorls half exposed in a large umbilicus; a keel in the middle of each side, and two ridges between it and the flattened front.

IN general form this resembles Nautilus biangulatus (*tab.* 458, *fig.* 2.); but in addition to the angles which characterize that, it has on each side of a broad flat front two ridges or lesser keels; in this it approaches N. multicarinatus, but that has a narrow concave area in place of the principal keel upon the side. The lesser keels in N. cariniferus disappear as it advances in growth; it may possibly therefore be only a variety of N. biangulatus: the specimens with keels are however much larger than the specimen figured. All the three species appear to have a deep sinus in the lip.

The great works going on in Cork Harbour have occasioned an immense display of the fossils of the Black-Rock, among which the shell before us is one of the less common.

FISSURELLA, Bruguières.

GEN. CHAR. Shell obliquely conical, in no part spiral, with an oblong aperture in the vertex, and an oval base.

his Genus of shells, so nearly resembling Patella, is ll distinguished from it by the perforated vertex ough which the branchiæ are supplied with a current water. Many of the species have diverging rays upon ir surface, and crenated edges; others are smooth: ne are without colour; others variously ornamented h red, brown, &c. The vertex is inclined towards head of the animal, and has within it a kind of ged ring, formed by the thickening of the edge of the foration. As this part varies in form and colour in the ferent species, it is often of service in forming speci- characters. The animal differs from that of Patella, having the branchiæ situated in an appropriate cavity, l not around the mantle.

FISSURELLA græca.

TAB. CCCCLXXXIII.

SPEC. CHAR. Ovate, oblong, convex, radiated; radii decussated by elevated lines, and thickened at the intersections; perforation small, elongated; margin of the base crenulated.

SYN. Patella græca *Linn.* &c, Brocchi, 2. 259. Fissurella græca, *Lam. Syst.* 6. *p.* 2, 11. *Deshayes, Coquilles Foss.* 2. *p.* 19. *t.* 2. *fig.* 7, 8, and 9.

THERE is a considerable degree of variation to be observed in the number and proportion of the rays upon the shell: but in general they are in sets, composed of one large and two small ones; and between each set is a still larger ray. The base is arched and ovate, with the anterior portion smallest. The surface is frequently antiquated, especially in the fossil specimens, which have also smaller and more numerous rays than the generality of recent ones; but the latter are subject to much variation, as observed above.

Found in the Crag of Ipswich, many years ago, by our valued friend the late Mrs. Cobbold, whose assiduity in collecting Crag shells, and generosity in bestowing them, have been so often proved in the course of this work, that every lover of science must join us in lamenting her loss, even if she had not possessed other high qualifications for which she was esteemed by all who knew her.

The Rev. G. R. Leathes has also furnished us with specimens.

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PATELLA lata.

TAB. CCCCLXXXIV.—*fig.* 1.

SPEC. CHAR. Obovate, depressed, nearly smooth, radiated; radii about 30, distant, rounded; apex very excentric.

NOT much longer than wide, very shallow, and rather irregular; the apex is placed at about one third the length of the base from the anterior edge. The radii are strongest and most distant upon the posterior portion.

This is probably one of the rarest productions of the Stonesfield slate: it was lately in the possession of Mr. G. Humphries. The portion that is broken off from the upper part, discloses something within that has the appearance of a section of the cup-like appendage of a Calyptræa; but as the apex is regular and not oblique, and this appearance is very imperfect, it does not seem sufficient evidence of its not being a Patella: it would be fortunate to find a specimen showing the under surface, but in this the shell adheres too closely to the stone to allow any hopes of being able to remove it. A view of the muscular impression would decide it to be a Patella.

PATELLA ancyloides.

TAB. CCCCLXXXIV.—*fig.* 2.

SPEC. CHAR. Convex, smooth; apex spiral; base oval.

A SMALL shell, without any strongly marked character except the decidedly spiral apex, which being turned to one side makes it resemble the Ancylus fluviatilis; but it is more depressed, and from the shells that accompany it, we would judge it to be marine; the apex is very much inclined towards the anterior edge.

Found with the following and many other minute organic remains at Ancliff, by the Rev. G. Cookson.

The larger figure is magnified.

PATELLA nanus.

TAB. CCCCLXXXIV.—*fig.* 3.

SPEC. CHAR. Obliquely smooth; base oval; apex obtuse.

VERY simple and regular in form, and perfectly smooth: the apex is placed about half way between the centre and the anterior edge; the ends are equally obtuse.

From Ancliff with the last.

One figure is enlarged.

CYPRIS, Müller, &c.

(*Cl.* Crustacea. *Sect.* Branchiopoda.)

Gen. Char. Animal inclosed within two oblong crustaceous shells; antennæ two, straight, simple, terminated by a brush of hairs; one eye; four legs; the head concealed; tail small.

Minute crustaceous animals, whose body is inclosed within a pair of shell-like valves, and which possess the characters above given, form this genus. It is distinguished from one or two analogous ones, which were arranged with it under Monoculus by Linnæus, chiefly by the oblong form of the shells, the simple antennæ, and the number of the legs. In the nearest genus (Cytherina) the legs are eight, and the antennæ are pilose for their whole length; there is no tail; and the shells are more distinctly reniform. The Cytherina is an inhabitant of the sea, while Cypris has only been found in fresh-water.

CYPRIS Faba?

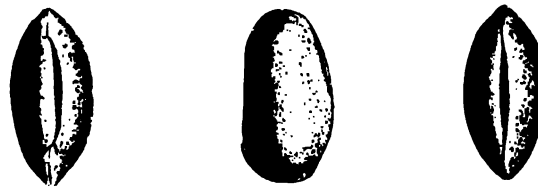
TAB. CCCCLXXXV.

SPEC. CHAR. Shells oblong-ovate, convex, slightly sinuated in the front, one folded over the other, minutely punctated.

SYN. Cypris fêve, Cypris Faba, *Desmaret, Nouv. Bull. des Sciences, année* 1813, *p.* 259. *pl.* 4. *no.* 8. *Hist. nat. des Crustacés fossiles,* 141. *t.* 11. *f.* 8. *Dr. Fitton* "On the strata below the chalk," &c. *Annals of Phil.* new series, 8. 365, &c.

IN length about one tenth of an inch, and about half as wide; one end (the superior?) is rather broader and blunter than the other; the front is nearly straight, a very slight sinus being formed by the folding of one valve over the other; at one extremity of this fold there is a small projection, like the radicle in a bean; the back is rounded with a longitudinal furrow separating the valves; the surface is minutely punctated, the substance rather coriaceous, but brittle and very thin.

This minute fossil is mentioned in the description of Tab. 31, as occurring in the Petworth marble; but as it



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does not strictly come within the province of the Conchologist, it has not as yet been otherways noticed in this work: its strong resemblance to a bivalve shell, and its importance as a distinguishing mark of particular strata, have been inducements to the introduction of it. In England it is found only in the Tetsworth or Weald Clay and the sands below it, either in layers in the slaty clay of the upper part of that formation, or dispersed in the limestones and grit which occur in it. In France it has been referred to the 2d fresh-water formation above the chalk, and is accompanied by Paludinæ and Cyrenæ, as in England;—is it not possible that the places in France where it has appeared, have not been enough examined, and that if they were fully traced, they would prove to belong to a formation analogous to the Tetsworth clay? for this fossil is not found above the chalk any where near London or Paris. Professor Sedgwick was the first person who noticed it in the Isle of Wight *. It has lately been discovered by Dr. Fitton, to whose liberality we are indebted for specimens from each of the localities;—at Hollington near Hastings, where it occurs in sand-stone along with a small Paludina and a Cyrena; in the Isle of Wight, either dispersed sparingly through light-brown compact clay at Grange Chine, or in slaty clay † (like the figure) in Sandown Bay, Chalk Bay,

* Annals of Phil., new series. Vol. 3. p. 335.

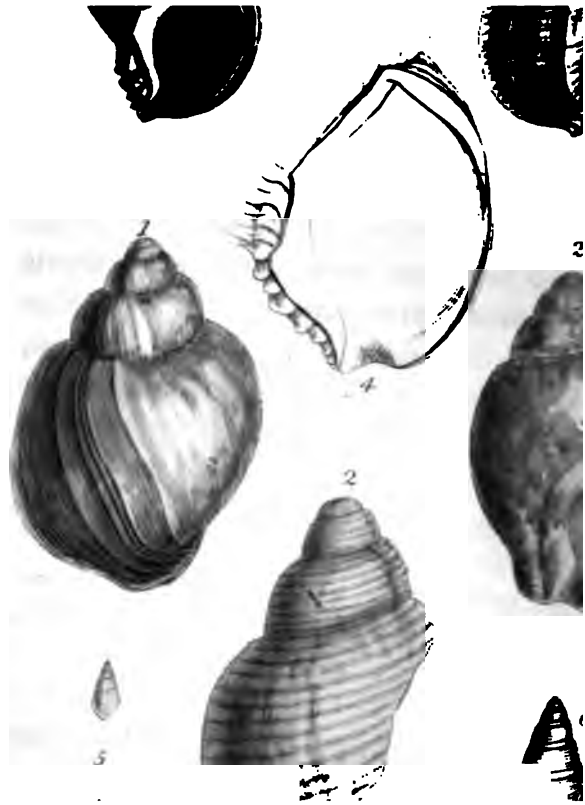
† This Clay also occurs in Sussex.

and other parts; and south of Punfield in Swanage Bay, in slaty clay, like that in the Isle of Wight, and accompanied, although sparingly, with similar shells. The localities given for the Cypris in France are Puy-en-Velay along with gypsum, under lava and over clay, resting upon granite, here it is accompanied by Planorbes and Cyclostomæ; the Gypsum quarries of Aix in Provence along with Paludinæ and Cyrenæ; and near Vichy in the department of l'Allier *.

Although there is a marine animal nearly allied to Cypris, and perhaps not positively to be distinguished except when recent, yet the occurrence of the fossil before us, in a series of localities always in company with fresh-water genera, justifies the name which we, as well as the French authors, have adopted.

The same anomaly occurs in the series of fresh-water strata (from the top of the Portland rock to the bottom of the green sand) which contains the Cypris that is met with above the London clay; that is, thin layers or beds of oysters close to fresh-water shells; and it will probably be a long time before this fact is explained. This fresh-water formation is an older one than is generally admitted, but it is not the oldest; for the bituminous coal series contains strata of fresh-water shells, besides others in which are found marine reliquiæ.

* Cuvier & Brongniart, Descript. Geol. des Env. de Paris. pp. 260, 261, 301.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BUCCINUM Dalei.

TAB. CCCCLXXXVI.—*figs.* 1 and 2.

. CHAR. Ovate, smooth, or slightly sulcated, thick; whorls very convex above; apex of the spire obtuse.

r. (α) ventricose, rarely sulcated. (*fig.* 1.)

r. (β) elongated, more or less sulcated. (*fig.* 2.)

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rounded form of the upper portions of the whorls btuse apex are characters that distinguish this Buc- n at first sight; the sulci are numerous and close, eldom extend to the last whorl; generally they are to be discovered near the apex. The beak, from h a ridge winds up the columella, is short, rather , and has a more or less recurved edge; the shell ck but very rarely, antiquated.

is very distinct shell was first received from our nted friend Mrs. Cobbold, in 1812; since which time Rev. Mr. Leathes has kindly supplied us with a se- showing the two varieties: it is named by him alei, to commemorate the labours of Dale, who ap- s to have been almost the first person that took no- of the Suffolk Crag fossils.

BUCCINUM tenerum.

TAB. CCCCLXXXVI.—*figs.* 3 and 4.

SPEC. CHAR. Ovate, acute, thin, coarsely striated; spire undulated; beak antiquated; whorls convex.

DISTINGUISHED from Buccinum undatum by the largeness of the striæ, the evenness of the last whorls, and by the imbricated arched remains of the edges of the successively formed beaks, and sometimes even the whole of the earlier formed lips; the whorls are also more convex, and the shell much thinner: in their general aspect the two species much resemble each other.

Met with abundantly in many parts of the Crag; but from the thinness and fragile state of the shell, large specimens can very rarely be removed from the spot upon which they are found. We are indebted to Mrs. Cobbold, the Rev. Mr. Leathes, and Mr. W. Phillips, for many specimens.

BUCCINUM unilineatum.

TAB. CCCCLXXXVI.—*figs.* 5 and 6.

SPEC. CHAR. Elongated, acute, finely striated; sides straight; beak pointed; a single furrow near the upper edge of each whorl.

A MINUTE shell, whose last whorl is rather ventricose; the aperture is narrow, pointed at both ends; the single impressed line that runs round the spire near the upper parts of the whorls is remarkable; the rest of the surface is very finely striated.

One of the many small shells that occur in the Limestone of Ancliff.

Fig. 6 is augmented to three times the natural length.

VOLVARIA, Lamarck.

GEN. CHAR. Shell cylindrical, convoluted; spire almost hidden; aperture as long as the shell, narrow, widest towards the truncated base; outer lip denticulated; columella plaited.

THE principal characters of this Genus, as limited by Mr. G. B. Sowerby, are, the plaited columella, the striated surface, the truncated base, and the thin edge of the outer lip: by its convoluted form and short spire it is related to Bulla; the plaits upon the columella form a resemblance to Marginella; but its nearest affinity is to Acteon (Tornatella, Lam.), from which its concealed spire, numerous plaits, and truncated base distinguish it. The Genus, as established by Lamarck, contains several recent species, which Mr. G. B. Sowerby has justly observed are more naturally related to Marginella, from which however they differ in some characters. The striated surface, from whence arises the denticulated edge of the lip, is important as a generic character, because it indicates the presence of an epidermis, and that the shell was never enveloped in the mantle of its inhabitant; and thus marks a decided distance between it and the recent shells Lamarck has arranged with it.

VOLVARIA acutiuscula.

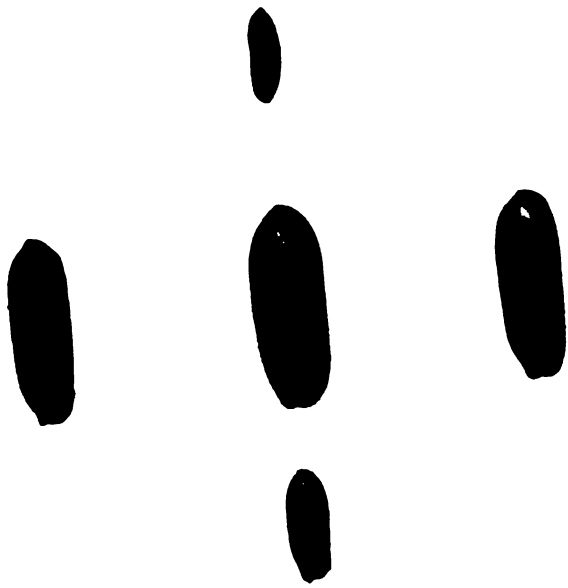
TAB. CCCCLXXXVII.

SPEC. CHAR. Nearly cylindrical, with a pointed apex; spire concealed; striæ numerous, composed of squarish punctums; plaits upon the columella variable.

SYN. V. acutiuscula, *G. B. Sowerby's Genera of Shells* (*Genus Volvaria, fig.* 3).

WELL distinguished from both the French species by the aperture being so prolonged beyond the apex of the spire as to conceal it within a small pit; it is also less cylindrical, being a little contracted towards both extremities; the plaits upon the columella are usually about four, but often irregular in size as well as variable in number.

This pretty shell has hitherto only been found in Barton Cliff: we are indebted to several friends for specimens: it does not appear to be rare. It is rendered more interesting by the reflection, that it is very nearly, but not precisely, like its congeners found near Paris: similar facts, we have reason to believe, will prove of more frequent occurrence than has been suspected.



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OSTREA læviuscula.

TAB. CCCCLXXXVIII.—*fig.* 1.

SPEC. CHAR. Depressed, rounded, triangular; surface obscurely imbricated, smooth; beak acute; scales distant.

VERY similar to the O. edulis, but smoother: the beak is pointed and turned backward; the lower valve is not ribbed, but very smooth; in the specimen figured it is attached by nearly its whole surface to what appears to be a fragment of a large Pinna, and the edges are elevated.

From the upper beds of the Lyas Clay at

OSTREA obscura.

TAB. CCCCLXXXVIII.—*fig.* 2.

SPEC. CHAR. Oblong, uneven, small; lower valve very deep, the other flat; beak curved.

A DIMINUTIVE species of Oyster (much resembling Gryphæa nana, tab. 383): its small size, oblong form, and deep valve are, when taken collectively, sufficient to distinguish it from every other: in some specimens the hinge pit is so much produced and curved as to prove that they are not young shells.

The Ancliff Limestone, so celebrated for pigmy shells, contains an abundance of these little oysters, associated with so many other genera that a description of them alone would almost form an introduction to a system of Marine Shells.

OSTREA costata.

TAB. CCCCLXXXVIII.—*fig.* 3.

SPEC. CHAR. Orbicular; lower valve deep, ribbed; ribs numerous, branched; upper valve flat, with an undulated margin.

BRANCHING, rounded ribs upon the under surface define this neat little Oyster. It is one of the miniature productions of the Ancliff Limestone.

OSTREA dorsata.

TAB. CCCCLXXXIX.—*figs.* 1 and 2.

SPEC. CHAR. Convex, subimbricated; upper valve marked with numerous, longitudinal, branched striæ; inner margin toothed.

SYN. Ostrea dorsata, *Deshayes.*

THE convexity of the upper valve of this Oyster appears to have given rise to the name dorsata; but the form varies much, according to the form of the substance to which it is attached: the numerous longitudinal impressed striæ are its peculiar character, and we know of no other fossil Oyster so marked: we have seen a very flat recent one, of a purple brown colour, attached by a large surface, with similar striæ.

Fig. 1 represents a single valve from Hordwell: it is the only one that has fallen under our observation.

Fig. 2 is an individual from France: it has a ridge along it produced by its having been attached to the stem of an Encrinus, and was sent us with the name of dorsata by Mons. Deshayes.

OSTREA semiplana.

TAB. CCCCLXXXIX.—*fig.* 3.

SPEC. CHAR. Oval, depressed, largely undulated; in the middle flat; attachment small.

SYN. Ostrea, No. 74, *Mantell, Geol. Suss. p.* 207. *t.* 25. *f.* 4.

ONE of those Oysters that prefer thin cylindrical subjects for their support, and from which they spread out like leaves: it approaches the plicated division of the Genus by the largeness of its undulations; but they are not angular, and the edge is not deeply sinuated by them.

Although not abundant, this seems to be a generally diffused fossil of the upper Chalk; Mr. Mantell obtained it near Lewes. Our specimens are from Norfolk; the larger, from a chalk-pit close to Norwich belonging to Mr. Barnes, was found at the depth of forty feet.

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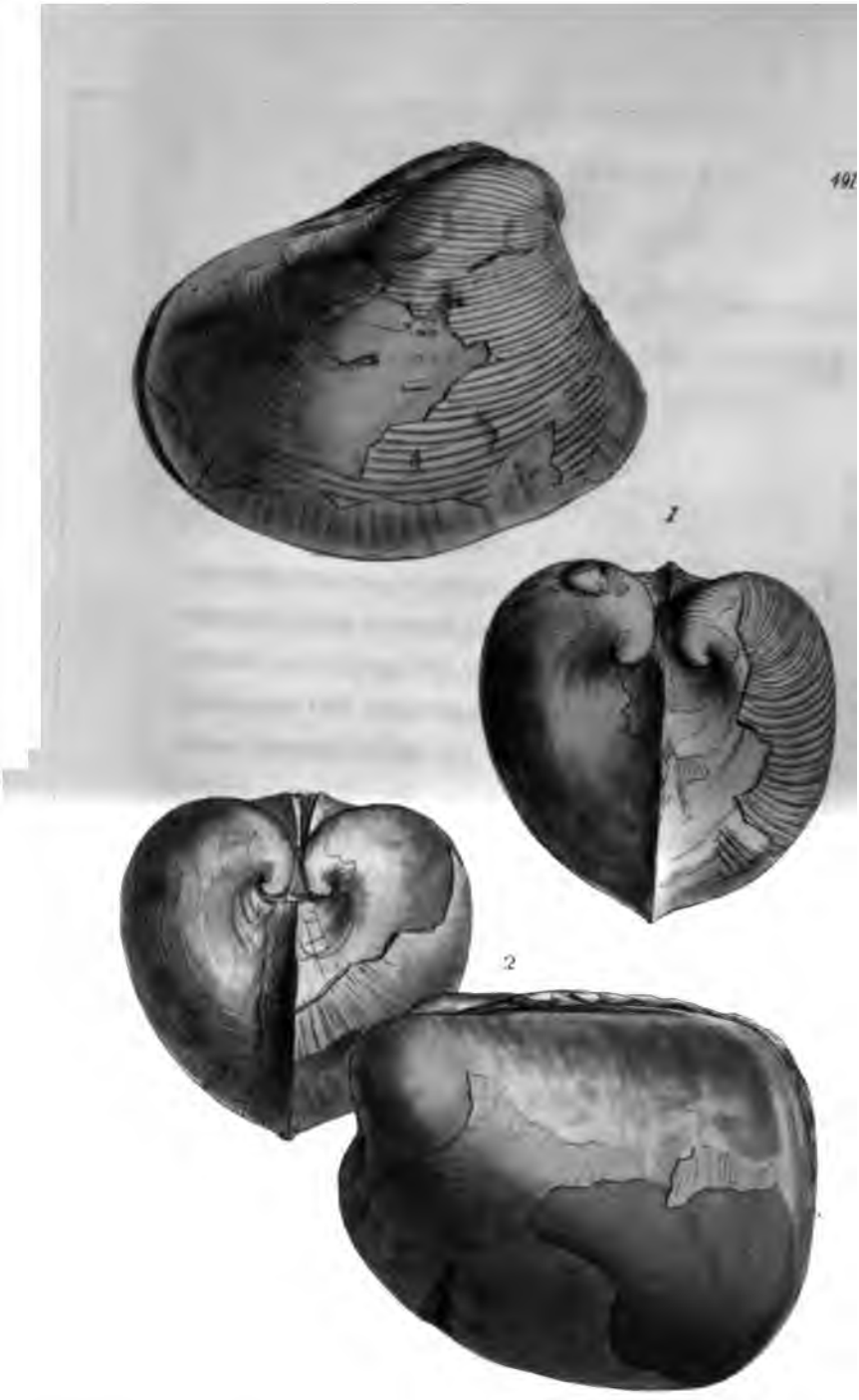
VENERICARDIA scalaris.

TAB. CCCCXC.—*fig. 3.*

SPEC. CHAR. Orbicular, subtriangular, depressed; longitudinal sulci about 20, linear; concentrically striated, hinge teeth long and thin.

THE ribs (if they can be so called) are very flat and close together, they are so regularly crenated by the concentric striæ as strongly to resemble a rope ladder; the rather triangular form and general flatness at once distinguish this from both the preceding, in whatever state of preservation it may be met with. They all have toothed edges, but the number of teeth in this is greater than in either of the others.

We are indebted to the Rev. G. R. Leathes for the use of a series of specimens, consisting of above 100, by which these three shells were proved to be distinct species; they are all of them liable to lose their external surfaces by decay; but even when thus rendered imperfect, the characters above given will be found to distinguish them. They are equally abundant in the Suffolk and Norfolk Crag.



ISOCARDIA concentrica.

TAB. CCCCXCI.—*fig.* 1.

Spec. Char. Transversely elongate, heart-shaped, concentrically sulcated; shell thin.

The depth and length are nearly equal, and considerably less than the width; the general form is a nearly regular oval, rendered heart-shaped by the projecting, neatly incurved beaks; the sulci are numerous, not deep, they extend the whole width, and gradually become more distant as they approach the edge; the surface, excepting that it is thus sulcated, is smooth and regular.

This handsome fossil is found in the Cornbrash Limestone at Bulwick, in Northamptonshire. We are indebted to John Hogg, Esq., of Leeds, for the knowledge of it.

ISOCARDIA oblonga.

TAB. CCCCXCI.—*fig.* 2.

SPEC. CHAR. Oblong, anteriorly expanded, smooth; posterior side very small, the beaks curved into it; hinge line nearly straight.

THIS is a transversely oblong shell, whose margin is four-sided, the side beneath the beaks is very short and much curved, the others long, and approaching to straight; it is very gibbose towards the beaks; the shell is very thin.

Found rather sparingly in the Black Rock, near Dublin, from two to four inches wide. It is a boldly formed fossil, and the specimens are generally very regular and well defined; none, however, have been met with that show enough of the hinge to prove by it that they belong to the genus Isocardia;—the same observation will also apply to the I. concentrica;—it is only by their general form that we are led to arrange them both under that genus, the thinness of their shells is rather an objection.

An Isocardia exactly resembling the Cor is met with in the Crag, and we have the cast of another very similar in Limestone; but neither, perfect enough for figuring.

PERNA quadrata.

TAB. CCCCXCII.

SPEC. CHAR. Quadrilateral, one side shorter than the other three; valves gibbose, unequal, the shorter side very concave, bounded by two obtuse carinæ; beaks prominent.

A REMARKABLY square and convex Perna: the crenatures in the hinge line, which fills one of the sides, are few and large. The shell, to judge from the remaining portion of the spar that filled the space it once occupied, was very thick, and so concave on the side beneath the beaks as to form there a heart-shaped cavity, bounded by ridges that curve gently along the beaks: in the centre of this cavity it is probable the byssus passed: the beak of the larger valve projects a good deal, the other is shorter; they are both pointed, and nearly straight.

This is little more than a cast in compact Limestone containing a little Mica; but as the characters are very conspicuous, and as it is probable the outside will not easily be detached from the stone when other specimens are found, we have not thought it necessary to postpone the figure.

It is from the Cornbrash at Bulwick, and was found by John Hogg, Esq.

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SPIRIFER lineatus.

TAB. CCCCXCIII.—*figs.* 1 and 2.

EC. CHAR. Gibbose, covered with numerous diverging sharp striæ; front semicircular, elevated in the middle; from the elevation of the front a convex band proceeds to the beak; hinge line long and straight; beaks rather distant.

IE width is nearly double the length; where the sure is perfectly preserved, the elevated striæ are found be minutely granulated; the beaks are curved and proach nearly together, the space between them is nded, and has a large triangular foramen; the hinge does not extend quite the whole width of the shell. found in the Dudley Limestone. Fig. 2 is from a speen collected by Charles Stokes, Esq.

SPIRIFER attenuatus.

TAB. CCCCXCIII. *figs.* 3, 4 and 5.

EC. CHAR. Convex, covered with numerous linear furrows, which increase in number towards the margin; front rounded, elevated in the middle, from each side of the elevation a deep furrow proceeds to the beak; sides produced, pointed; hinge line long, straight; space between the beaks flat, with nearly parallel edges.

IE furrows upon the surface of this shell form beeen them thin branched ribs: in many specimens the vated part of the front is not followed by a corrending elevation along the surface, although the other ve is concave in that direction; the width is nearly ee times the length in some specimens, others are s attenuated laterally.
Produced by the Black Limestone near Dublin.

SPIRIFER bisulcatus.

TAB. CCCCXCIV.—*figs.* 1 and 2.

SPEC. CHAR. Semicircular, gibbose, longitudinally sulcated, elevated in the middle, a deep furrow on each side the elevation; hinge line long, straight; beaks close.

BUT little wider than long. The furrows are about 30; two of them near the middle are much deeper than the rest, and the space between them is convex in some specimens, but flat in others (see fig. 2), the space between the beaks is very long, flat, and has nearly parallel sides in consequence of the edges of it upon the deeper valve being reflected.

From near Dublin.

SPIRIFER distans.

TAB. CCCCXCIV.—*fig.* 3.

SPEC. CHAR. Semicircular, gibbose; sides sulcated longitudinally; front elevated, elevation extending to the beaks, concave along the middle; beaks incurved, distant, the space between them curved, triangular.

TEN or twelve furrows occupy the sides of this shell, the elevated part along the middle has no furrows; the length is about two-thirds of the width.

Much resembling the last, and also from Dublin.

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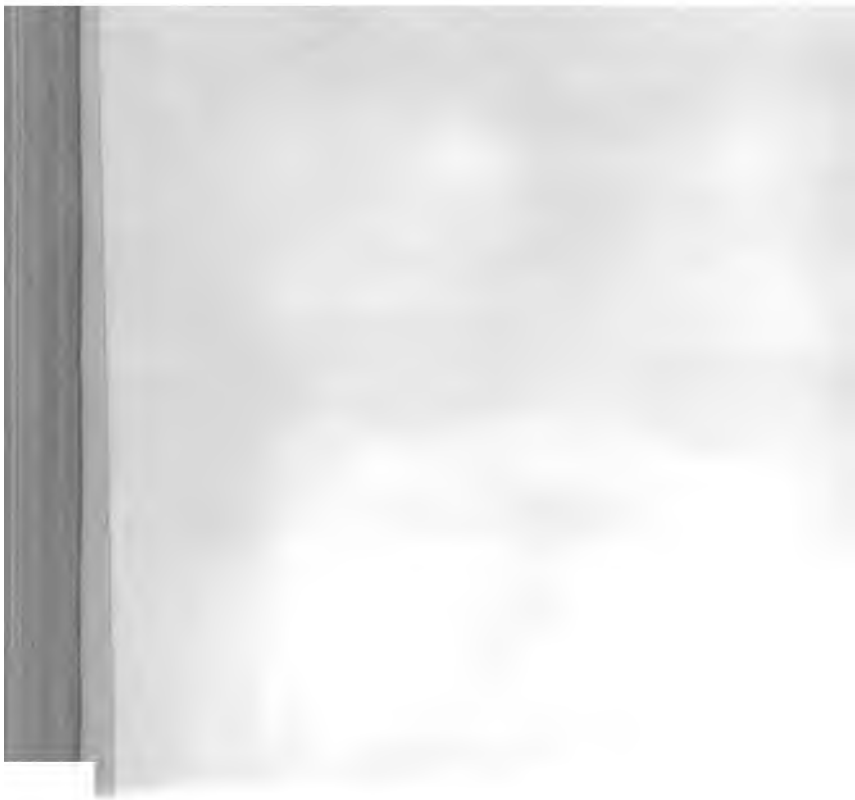

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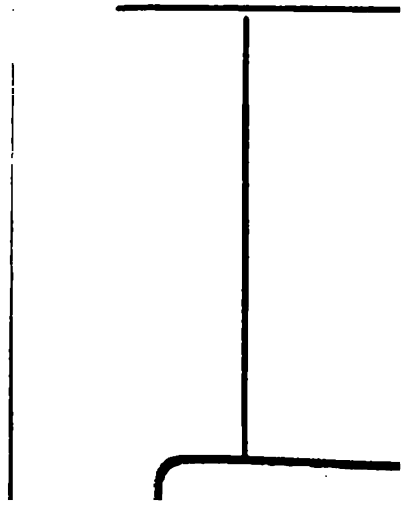
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